

SEQUENCE LISTING

<110> ROBERTS, JOSEPH
 SETHURAMAN, NATARAJAN
 MACALLISTER, THOMAS

<120> CLONING, OVEREXPRESSION AND THERAPEUTIC USE OF
 BIOACTIVE HISTIDINE AMMONIA LYASE

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<140> 09/833,745

<141> 2001-04-13

<150> 60/197,770

<151> 2000-04-14

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<170> PatentIn Ver. 2.1

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 Arg Glu Val Val Arg Ala Leu Met Phe Leu Arg Ala Lys Thr Leu Ala
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 Lys Glu Gly Leu Ala Leu Val Asn Gly Thr Asp Gly Met Leu Gly Gln
 195 200 205
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Pro Gln Val Leu Glu Glu Leu Ala Ser Val Arg Ala His Ile Asp Ala
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 Leu Ala Ser Ala Asp Thr Pro Val Tyr Gly Ile Ser Thr Gly Phe Gly
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Ala Met Gln Glu Asp His Val Ser Leu Gly Trp His Ala Ala Arg Lys
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35 40 45

Leu Ala Xaa Xaa Xaa Xaa Pro Val Tyr Gly Xaa Ser Thr Gly Phe Gly
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Ala Leu Ala Xaa Arg His Ile Xaa Xaa Glu Xaa Arg Ala Xaa Leu Gln
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Lys Glu Gly Leu Ala Leu Xaa Asn Gly Thr Asp Gly Met Leu Gly Xaa
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Leu Xaa Met Ala Leu Ala Asp Leu Xaa Xaa Leu Xaa Xaa Xaa Ala Asp
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Xaa Thr Ala Ala Xaa Ser Xaa Glu Ala Xaa Leu Gly Thr Asp Xaa Val
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Gly Glu Gly Glu Ala Thr Asp Ala His Gly Asp Ile Arg Pro Val Pro
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Glu Leu Phe Ala Glu Ala Gly Leu Thr Pro Val Glu Leu Ala Glu Lys
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Glu Gly Leu Ala Leu Val Asn Gly Thr Asp Gly Met Leu Gly Gln Leu
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Thr Ala Ala Met Ser Val Glu Ala Gln Leu Gly Thr Asp Gln Val Phe
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 Arg Glu Val Val Arg Ala Leu Met Phe Leu Arg Ala Lys Thr Leu Ala
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 Ser Gly Arg Ser Val Arg Pro Val Val Leu Glu Thr Met Val Gly Met
 115 120 125
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 Cys Ser Gly Asp Leu Ala Pro Leu Ser His Cys Ala Leu Val Leu Met
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 Gly Glu Gly Glu Ala Thr Asp Ala His Gly Asp Ile Arg Pro Val Pro
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 Glu Leu Phe Ala Glu Ala Gly Leu Thr Pro Val Glu Leu Ala Glu Lys
 180 185 190
 Glu Gly Leu Ala Leu Val Asn Gly Thr Asp Gly Met Leu Gly Gln Leu
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 210 215 220
 Thr Ala Ala Met Ser Val Glu Ala Gln Leu Gly Thr Asp Gln Val Phe
 225 230 235 240
 Arg Ala Glu Leu His Glu Pro Leu Arg Pro His Pro Gly Gln Gly Arg
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 Ser Ala Gln Asn Met Phe Ala Phe Leu Ala Asp Ser Pro Ile Val Ala
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 Ser His Arg Glu Gly Asp Gly Arg Val Gln Asp Ala Tyr Ser Leu Arg
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 Cys Ser Pro Gln Val Thr Gly Ala Ala Arg Asp Thr Ile Ala His Ala
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 Pro Val Ala Tyr Val Leu Asp Phe Leu Ala Ile Ala Val Ala Asp Leu
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 Ala Leu Ala Thr Arg His Ile Ala Pro Glu Asp Arg Ala Lys Leu Gln
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 Arg Ser Leu Ile Arg Ser His Ala Ala Gly Met Gly Glu Pro Val Glu
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 Arg Glu Val Val Arg Ala Leu Met Phe Leu Arg Ala Lys Thr Leu Ala
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 Glu Leu Phe Ala Glu Ala Gly Leu Thr Pro Val Glu Leu Ala Glu Lys
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Glu Gly Leu Ala Leu Val Asn Gly Thr Asp Gly Met Leu Gly Gln Leu
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 210 215 220
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 Arg Ala Glu Leu His Glu Pro Leu Arg Pro His Pro Gly Gln Gly Arg
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 Ser His Arg Glu Gly Asp Gly Arg Val Gln Asp Ala Tyr Ser Leu Arg
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 Cys Ser Pro Gln Val Thr Gly Ala Ala Arg Asp Thr Ile Ala His Ala
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 Met Gly Glu Pro Val Glu Arg Glu Val Leu Arg Ala
 1 5 10

<210> 34
 <211> 509
 <212> PRT
 <213> Pseudomonas putida

<400> 34
 Thr Glu Leu Thr Leu Lys Pro Gly Thr Leu Thr Leu Ala Gln Leu Arg
 1 5 10 15
 Ala Ile His Ala Ala Pro Val Arg Leu Gln Leu Asp Ala Ser Ala Ala
 20 25 30
 Pro Ala Ile Asp Ala Ser Val Ala Cys Val Glu Gln Ile Ile Ala Glu
 35 40 45
 Asp Arg Thr Ala Tyr Gly Ile Asn Thr Gly Phe Gly Leu Leu Ala Ser
 50 55 60
 Thr Arg Ile Ala Ser His Asp Leu Glu Asn Leu Gln Arg Ser Leu Val
 65 70 75 80
 Leu Ser His Ala Ala Gly Ile Gly Ala Pro Leu Asp Asp Asp Leu Val
 85 90 95
 Arg Leu Ile Met Val Leu Lys Ile Asn Ser Leu Ser Arg Gly Phe Ser
 100 105 110
 Gly Ile Arg Arg Lys Val Ile Asp Ala Leu Ile Ala Leu Val Asn Ala
 115 120 125
 Glu Val Tyr Pro His Ile Pro Leu Lys Gly Ser Val Gly Ala Ser Gly
 130 135 140
 Asp Leu Ala Pro Leu Ala Thr Met Ser Leu Val Leu Leu Gly Glu Gly
 145 150 155 160
 Lys Ala Arg Tyr Lys Gly Gln Trp Leu Ser Ala Thr Glu Ala Leu Ala
 165 170 175

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Val	Ala	Gly	Leu	Glu	Pro	Leu	Thr	Leu	Ala	Ala	Lys	Glu	Gly	Leu	Ala	180	185	190
Leu	Leu	Asn	Gly	Thr	Gln	Ala	Ser	Thr	Ala	Tyr	Ala	Leu	Arg	Gly	Leu	195	200	205
Phe	Tyr	Ala	Glu	Asp	Leu	Tyr	Ala	Ala	Ala	Ile	Ala	Cys	Gly	Gly	Leu	210	215	220
Ser	Val	Glu	Ala	Val	Leu	Gly	Ser	Arg	Ser	Pro	Phe	Asp	Ala	Arg	Ile	225	230	235
His	Glu	Ala	Arg	Gly	Gln	Arg	Gly	Gln	Ile	Asp	Thr	Ala	Ala	Cys	Phe	245	250	255
Arg	Asp	Leu	Leu	Gly	Asp	Ser	Ser	Glu	Val	Ser	Leu	Ser	His	Lys	Asn	260	265	270
Cys	Asp	Lys	Val	Gln	Asp	Pro	Tyr	Ser	Leu	Arg	Cys	Gln	Pro	Gln	Val	275	280	285
Met	Gly	Ala	Cys	Leu	Thr	Gln	Leu	Arg	Gln	Ala	Ala	Glu	Val	Leu	Gly	290	295	300
Ile	Glu	Ala	Asn	Ala	Val	Ser	Asp	Asn	Pro	Leu	Val	Phe	Ala	Ala	Glu	305	310	315
Gly	Asp	Val	Ile	Ser	Gly	Gly	Asn	Phe	His	Ala	Glu	Pro	Val	Ala	Met	325	330	335
Ala	Ala	Asp	Asn	Leu	Ala	Leu	Ala	Ile	Ala	Glu	Ile	Gly	Ser	Leu	Ser	340	345	350
Glu	Arg	Arg	Ile	Ser	Leu	Met	Met	Asp	Lys	His	Met	Ser	Gln	Leu	Pro	355	360	365
Pro	Phe	Leu	Val	Glu	Asn	Gly	Gly	Val	Asn	Ser	Gly	Phe	Met	Ile	Ala	370	375	380
Gln	Val	Thr	Ala	Ala	Ala	Leu	Ala	Ser	Glu	Asn	Lys	Ala	Leu	Ser	His	385	390	395
Pro	His	Ser	Val	Asp	Ser	Leu	Pro	Thr	Ser	Ala	Asn	Gln	Glu	Asp	His	405	410	415
Val	Ser	Met	Ala	Pro	Ala	Ala	Gly	Lys	Arg	Leu	Trp	Glu	Met	Ala	Glu	420	425	430
Asn	Thr	Arg	Gly	Val	Pro	Ala	Ile	Glu	Trp	Leu	Gly	Ala	Cys	Gln	Gly	435	440	445
Leu	Asp	Leu	Arg	Lys	Gly	Leu	Lys	Thr	Ser	Ala	Lys	Leu	Glu	Lys	Ala	450	455	460
Arg	Gln	Ala	Leu	Arg	Ser	Glu	Val	Ala	His	Tyr	Asp	Arg	Asp	Arg	Phe	465	470	475
																480		

0983745.07601

Phe Ala Pro Asp Ile Glu Lys Ala Val Glu Leu Leu Ala Lys Gly Ser
485 490 495

Leu Thr Gly Leu Leu Pro Ala Gly Val Leu Pro Ser Leu
500 505

<210> 35

<211> 511

<212> PRT

<213> *Rhizobium meliloti*

<400> 35

Met Thr Val Ile Leu Arg Pro Gly Ser Val Pro Leu Ser Asp Leu Glu
1 5 10 15

Thr Ile Tyr Trp Thr Gly Ala Pro Ala Arg Leu Asp Ala Ala Phe Asp
20 25 30

Ala Gly Ile Ala Lys Ala Ala Ala Arg Ile Ala Glu Ile Val Ala Gly
35 40 45

Asn Ala Pro Val Tyr Gly Ile Asn Thr Gly Phe Gly Lys Leu Ala Ser
50 55 60

Ile Lys Ile Asp Ser Ser Asp Val Ala Thr Leu Gln Arg Asn Leu Ile
65 70 75 80

Leu Ser His Cys Cys Gly Val Gly Gln Pro Leu Thr Glu Asp Ile Val
85 90 95

Arg Leu Ile Met Ala Leu Lys Leu Ile Ser Leu Gly Arg Gly Ala Ser
100 105 110

Gly Val Arg Leu Glu Leu Val Arg Leu Ile Glu Ala Met Leu Asp Lys
115 120 125

Gly Val Ile Pro Leu Ile Pro Glu Lys Gly Ser Val Gly Ala Ser Gly
130 135 140

Asp Leu Ala Pro Leu Ala His Met Ala Ala Val Met Met Gly His Gly
145 150 155 160

Glu Ala Phe Phe Ala Gly Glu Arg Met Lys Gly Asp Ala Ala Leu Lys
165 170 175

Ala Ala Gly Leu Ser Pro Val Thr Leu Ala Ala Lys Glu Gly Leu Ala
180 185 190

Leu Ile Asn Gly Thr Gln Val Ser Thr Ala Leu Ala Leu Ala Gly Leu
195 200 205

Phe Arg Ala His Arg Ala Gly Gln Ala Ala Leu Ile Thr Gly Ala Leu
210 215 220

Ser Thr Asp Ala Ala Met Gly Ser Ser Ala Pro Phe His Pro Asp Ile
225 230 235 240

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<210> 36
<211> 657
<212> PRT
<213> Mus sp.

<400> 36

Met	Pro	Arg	Tyr	Thr	Val	His	Val	Arg	Gly	Glu	Trp	Leu	Ala	Val	Pro
1				5					10					15	
Cys	Gln	Asp	Gly	Lys	Leu	Thr	Val	Gly	Trp	Leu	Gly	Arg	Glu	Ala	Val
			20					25					30		
Arg	Arg	Tyr	Met	Lys	Asn	Lys	Pro	Asp	Asn	Gly	Gly	Phe	Thr	Ser	Val
		35					40					45			
Asp	Glu	Val	Gln	Phe	Leu	Val	His	Arg	Cys	Lys	Gly	Leu	Gly	Leu	Leu
	50					55					60				
Asp	Asn	Glu	Asp	Glu	Leu	Glu	Val	Ala	Leu	Glu	Asp	Asn	Glu	Phe	Val
65					70					75					80
Glu	Val	Val	Ile	Glu	Gly	Asp	Val	Met	Ser	Pro	Asp	Phe	Ile	Pro	Ser
			85						90					95	
Gln	Pro	Glu	Gly	Val	Phe	Leu	Tyr	Ser	Lys	Tyr	Arg	Glu	Pro	Glu	Lys
			100					105					110		
Tyr	Ile	Ala	Leu	Asp	Gly	Asp	Ser	Leu	Ser	Thr	Glu	Asp	Leu	Val	Asn
		115					120					125			
Leu	Gly	Lys	Gly	Arg	Tyr	Lys	Ile	Lys	Leu	Thr	Ser	Ile	Ala	Glu	Lys
	130					135					140				
Lys	Val	Gln	Gln	Ser	Arg	Glu	Val	Ile	Asp	Ser	Ile	Ile	Lys	Glu	Arg
145					150					155					160
Thr	Val	Val	Tyr	Gly	Ile	Thr	Thr	Gly	Phe	Gly	Lys	Phe	Ala	Arg	Thr
			165						170					175	
Val	Ile	Pro	Ala	Asn	Lys	Leu	Gln	Glu	Leu	Gln	Val	Asn	Leu	Val	Arg
			180					185					190		
Ser	His	Ser	Ser	Gly	Val	Gly	Lys	Pro	Leu	Ser	Pro	Glu	Arg	Cys	Arg
		195					200					205			
Met	Leu	Leu	Ala	Leu	Arg	Ile	Asn	Val	Leu	Ala	Lys	Gly	Tyr	Ser	Gly
	210					215					220				
Ile	Ser	Leu	Glu	Thr	Leu	Lys	Gln	Val	Ile	Glu	Ala	Phe	Asn	Ala	Ser
225					230					235					240
Cys	Leu	Ser	Tyr	Val	Pro	Glu	Lys	Gly	Thr	Val	Gly	Ala	Ser	Gly	Asp
			245						250					255	
Leu	Ala	Pro	Leu	Ser	His	Leu	Ala	Leu	Gly	Leu	Ile	Gly	Glu	Gly	Lys
			260					265					270		
Met	Trp	Ser	Pro	Lys	Ser	Gly	Trp	Ala	Asp	Ala	Lys	Tyr	Val	Leu	Glu
		275					280					285			
Ala	His	Gly	Leu	Lys	Pro	Ile	Val	Leu	Lys	Pro	Lys	Glu	Gly	Leu	Ala
	290					295					300				

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Leu Ile Asn Gly Thr Gln Met Ile Thr Ser Leu Gly Cys Glu Ala Leu
 305 310 315 320
 Glu Arg Ala Ser Ala Ile Ala Arg Gln Ala Asp Ile Val Ala Ala Leu
 325 330 335
 Thr Leu Glu Val Leu Lys Gly Thr Thr Lys Ala Phe Asp Thr Asp Ile
 340 345 350
 His Ala Val Arg Pro His Arg Gly Gln Ile Glu Val Ala Phe Arg Phe
 355 360 365
 Arg Ser Leu Leu Asp Ser Asp His His Pro Ser Glu Ile Ala Glu Ser
 370 375 380
 His Arg Phe Cys Asp Arg Val Gln Asp Ala Tyr Thr Leu Arg Cys Cys
 385 390 395 400
 Pro Gln Val His Gly Val Val Asn Asp Thr Ile Ala Phe Val Lys Asp
 405 410 415
 Ile Ile Thr Thr Glu Leu Asn Ser Ala Thr Asp Asn Pro Met Val Phe
 420 425 430
 Ala Ser Arg Gly Glu Thr Ile Ser Gly Gly Asn Phe His Gly Glu Tyr
 435 440 445
 Pro Ala Lys Ala Leu Asp Tyr Leu Ala Ile Gly Val His Glu Leu Ala
 450 455 460
 Ala Ile Ser Glu Arg Arg Ile Glu Arg Leu Cys Asn Pro Ser Leu Ser
 465 470 475 480
 Glu Leu Pro Ala Phe Leu Val Ala Glu Gly Gly Leu Asn Ser Gly Phe
 485 490 495
 Met Ile Ala His Cys Thr Ala Ala Ala Leu Val Ser Glu Ser Lys Ala
 500 505 510
 Leu Cys His Pro Ser Ser Val Asp Ser Leu Ser Thr Ser Ala Ala Thr
 515 520 525
 Glu Asp His Val Ser Met Gly Gly Trp Ala Ala Arg Lys Ala Leu Arg
 530 535 540
 Val Val Glu His Val Glu Gln Val Leu Ala Ile Glu Leu Leu Ala Ala
 545 550 555 560
 Cys Gln Gly Ile Glu Phe Leu Arg Pro Leu Lys Thr Thr Thr Pro Leu
 565 570 575
 Glu Lys Val Tyr Asp Leu Val Arg Ser Val Val Arg Pro Trp Ile Lys
 580 585 590
 Asp Arg Phe Met Ala Pro Asp Ile Glu Ala Ala His Arg Leu Leu Leu
 595 600 605

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<210> 37
<211> 657
<212> PRT
<213> Rattus sp.
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<400> 37																
Met	Pro	Arg	Tyr	Thr	Val	His	Val	Arg	Gly	Glu	Trp	Leu	Ala	Val	Pro	
1				5					10					15		
Cys	Gln	Asp	Gly	Lys	Leu	Ser	Val	Gly	Trp	Leu	Gly	Arg	Glu	Ala	Val	
			20					25					30			
Arg	Arg	Tyr	Met	Lys	Asn	Lys	Pro	Asp	Asn	Gly	Gly	Phe	Thr	Ser	Val	
		35					40					45				
Asp	Glu	Val	Arg	Phe	Leu	Val	Arg	Arg	Cys	Lys	Gly	Leu	Gly	Leu	Leu	
	50					55					60					
Asp	Asn	Glu	Asp	Leu	Leu	Glu	Val	Ala	Leu	Glu	Asp	Asn	Glu	Phe	Val	
65					70					75					80	
Glu	Val	Val	Ile	Glu	Gly	Asp	Val	Met	Ser	Pro	Asp	Phe	Ile	Pro	Ser	
				85					90					95		
Gln	Pro	Glu	Gly	Val	Phe	Leu	Tyr	Ser	Lys	Tyr	Arg	Glu	Pro	Glu	Lys	
			100					105					110			
Tyr	Ile	Ala	Leu	Asp	Gly	Asp	Ser	Leu	Ser	Thr	Glu	Asp	Leu	Val	Asn	
		115					120					125				
Leu	Gly	Lys	Gly	His	Tyr	Lys	Ile	Lys	Leu	Thr	Ser	Ile	Ala	Glu	Lys	
	130					135					140					
Lys	Val	Gln	Gln	Ser	Arg	Glu	Val	Ile	Asp	Ser	Ile	Ile	Lys	Glu	Arg	
145					150				155						160	
Thr	Val	Val	Tyr	Gly	Ile	Thr	Thr	Gly	Phe	Gly	Lys	Phe	Ala	Arg	Thr	
				165					170					175		
Val	Ile	Pro	Ala	Asn	Lys	Leu	Gln	Glu	Leu	Gln	Val	Asn	Leu	Val	Arg	
			180					185					190			
Ser	His	Ser	Ser	Gly	Val	Gly	Lys	Pro	Leu	Ser	Pro	Glu	Arg	Cys	Arg	
		195					200					205				

Met 210	Leu	Leu	Ala	Leu	Arg	Ile 215	Asn	Val	Leu	Ala	Lys 220	Gly	Tyr	Ser	Gly
Ile 225	Ser	Leu	Glu	Thr	Leu 230	Lys	Gln	Val	Ile	Glu 235	Val	Phe	Asn	Ala	Ser 240
Cys	Leu	Ser	Tyr	Val 245	Pro	Glu	Lys	Gly	Thr 250	Val	Gly	Ala	Ser	Gly 255	Asp
Leu	Ala	Pro	Leu 260	Ser	His	Leu	Ala	Leu 265	Gly	Leu	Ile	Gly	Glu 270	Gly	Lys
Met	Trp	Ser 275	Pro	Lys	Ser	Gly	Trp 280	Ala	Asp	Ala	Lys	Tyr 285	Val	Leu	Glu
Ala 290	His	Gly	Leu	Lys	Pro	Ile 295	Val	Leu	Lys	Pro	Lys 300	Glu	Gly	Leu	Ala
Leu 305	Ile	Asn	Gly	Thr	Gln 310	Met	Ile	Thr	Ser	Leu 315	Gly	Cys	Glu	Ala	Val 320
Glu	Arg	Ala	Ser	Ala 325	Ile	Ala	Arg	Gln	Ala 330	Asp	Ile	Val	Ala	Ala 335	Leu
Thr	Leu	Glu	Val 340	Leu	Lys	Gly	Thr	Thr 345	Lys	Ala	Phe	Asp	Thr 350	Asp	Ile
His	Ala 355	Val	Arg	Pro	His	Arg	Gly 360	Gln	Ile	Glu	Val	Ala 365	Phe	Arg	Phe
Arg	Ser 370	Leu	Leu	Asp	Ser	Asp 375	His	His	Pro	Ser	Glu 380	Ile	Ala	Glu	Ser
His 385	Arg	Phe	Cys	Asp	Arg 390	Val	Gln	Asp	Ala	Tyr 395	Thr	Leu	Arg	Cys	Cys 400
Pro	Gln	Val	His 405	Gly	Val	Val	Asn	Asp	Thr 410	Ile	Ala	Phe	Val	Lys 415	Asp
Ile	Ile	Thr	Thr 420	Glu	Leu	Asn	Ser	Ala 425	Thr	Asp	Asn	Pro	Met 430	Val	Phe
Ala	Ser	Arg 435	Gly	Glu	Thr	Ile	Ser 440	Gly	Gly	Asn	Phe	His 445	Gly	Glu	Tyr
Pro 450	Ala	Lys	Ala	Leu	Asp	Tyr 455	Leu	Ala	Ile	Gly	Val 460	His	Glu	Leu	Ala
Ala 465	Ile	Ser	Glu	Arg	Arg 470	Ile	Glu	Arg	Leu	Cys 475	Asn	Pro	Ser	Leu	Ser 480
Glu	Leu	Pro	Ala	Phe 485	Leu	Val	Ala	Glu	Gly 490	Gly	Leu	Asn	Ser	Gly 495	Phe
Met	Ile	Ala	His 500	Cys	Thr	Ala	Ala	Ala 505	Leu	Val	Ser	Glu	Ser 510	Lys	Ala

Leu

<400> 38

Gln Pro Glu Gly Val Tyr Leu Tyr Ser Lys Tyr Arg Glu Pro Glu Lys
100 105 110

Tyr Ile Glu Leu Asp Gly Asp Arg Leu Thr Thr Glu Asp Leu Val Asn
 115 120 125
 Leu Gly Lys Gly Arg Tyr Lys Ile Lys Leu Thr Pro Thr Ala Glu Lys
 130 135 140
 Arg Val Gln Lys Ser Arg Glu Val Ile Asp Ser Ile Ile Lys Glu Lys
 145 150 155 160
 Thr Val Val Tyr Gly Ile Thr Thr Gly Phe Gly Lys Phe Ala Arg Thr
 165 170 175
 Val Ile Pro Ile Asn Lys Leu Gln Glu Leu Gln Val Asn Leu Val Arg
 180 185 190
 Ser His Ser Ser Gly Val Gly Lys Pro Leu Ser Pro Glu Arg Cys Arg
 195 200 205
 Met Leu Leu Ala Leu Arg Ile Asn Val Leu Ala Lys Gly Tyr Ser Gly
 210 215 220
 Ile Ser Leu Glu Thr Leu Lys Gln Val Ile Glu Met Phe Asn Ala Ser
 225 230 235 240
 Cys Leu Pro Tyr Val Pro Glu Lys Gly Thr Val Gly Ala Ser Gly Asp
 245 250 255
 Leu Ala Pro Leu Ser His Leu Ala Leu Gly Leu Val Gly Glu Gly Lys
 260 265 270
 Met Trp Ser Pro Lys Ser Gly Trp Ala Asp Ala Lys Tyr Val Leu Glu
 275 280 285
 Ala His Gly Leu Lys Pro Val Ile Leu Lys Pro Lys Glu Gly Leu Ala
 290 295 300
 Leu Ile Asn Gly Thr Gln Met Ile Thr Ser Leu Gly Cys Glu Ala Val
 305 310 315 320
 Glu Arg Ala Ser Ala Ile Ala Arg Gln Ala Asp Ile Val Ala Ala Leu
 325 330 335
 Thr Leu Glu Val Leu Lys Gly Thr Thr Lys Ala Phe Asp Thr Asp Ile
 340 345 350
 His Ala Leu Arg Pro His Arg Gly Gln Ile Glu Val Ala Phe Arg Phe
 355 360 365
 Arg Ser Leu Leu Asp Ser Leu Arg Cys Cys Pro Gln Val His Gly Val
 370 375 380
 Val Asn Asp Thr Ile Ala Phe Val Lys Asn Ile Ile Thr Thr Glu Leu
 385 390 395 400
 Asn Ser Ala Thr Asp Asn Pro Met Val Phe Ala Asn Arg Gly Glu Thr
 405 410 415

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Val Ser Gly Gly Asn Phe His Gly Glu Tyr Pro Ala Lys Ala Leu Asp
 420 425 430
 Tyr Leu Ala Ile Gly Ile His Glu Leu Ala Ala Ile Ser Glu Arg Arg
 435 440 445
 Ile Glu Arg Leu Cys Asn Pro Ser Leu Ser Glu Leu Pro Ala Phe Leu
 450 455 460
 Val Ala Glu Gly Gly Leu Asn Ser Gly Phe Met Ile Ala His Cys Thr
 465 470 475 480
 Ala Ala Ala Leu Val Ser Glu Asn Lys Ala Leu Cys His Pro Ser Ser
 485 490 495
 Val Asp Ser Leu Ser Thr Ser Ala Ala Thr Glu Asp His Val Ser Met
 500 505 510
 Gly Gly Trp Ala Ala Arg Lys Ala Leu Arg Val Ile Glu His Val Glu
 515 520 525
 Gln Val Leu Ala Ile Glu Leu Leu Ala Ala Cys Gln Gly Ile Glu Phe
 530 535 540
 Leu Arg Pro Leu Lys Thr Thr Thr Pro Leu Glu Lys Val Tyr Asp Leu
 545 550 555 560
 Val Arg Ser Val Val Arg Pro Trp Ile Lys Asp Arg Phe Met Ala Pro
 565 570 575
 Asp Ile Glu Ala Ala His Arg Leu Leu Leu Glu Gln Lys Val Trp Glu
 580 585 590
 Val Ala Ala Pro Tyr Ile Glu Lys Tyr Arg Met Glu His Ile Pro Glu
 595 600 605
 Ser Arg Pro Leu Ser Pro Thr Ala Phe Ser Leu Gln Phe Leu His Lys
 610 615 620
 Lys Ser Thr Lys Ile Pro Glu Ser Glu Asp Leu
 625 630 635

<210> 39

<211> 677

<212> PRT

<213> *Caenorhabditis elegans*

<400> 39

Met Arg Leu Gln Val Gln Ile Gly Thr Glu Cys Val Val Val Pro Cys
 1 5 10 15
 Lys Pro Asp Asp Thr Ile His Ala Val Ala Lys Lys Ser Val Glu Lys
 20 25 30
 Leu Arg Arg Leu Arg Pro Lys Leu Pro Leu Ala Asp Asp Tyr Phe Glu
 35 40 45

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 1081201542E860

Val	Arg	Arg	Thr	Val	Gly	Asn	Ser	Leu	Leu	Asp	Pro	Glu	Asp	Leu	Val
	50					55					60				
Ser	Asp	Val	Leu	Lys	Asp	Ser	Asp	Phe	Ile	Ile	Val	Ala	Ala	Ser	Val
	65				70					75					80
Glu	Glu	Thr	Glu	Asp	Ala	Lys	Glu	Ala	Lys	Lys	Gln	Glu	Glu	Ile	Asp
				85					90					95	
Asn	Ala	Arg	Ala	Glu	Ile	Glu	Lys	Ile	Asp	Asn	Arg	Arg	Arg	Lys	Val
			100					105						110	
Ser	Phe	Ala	Asp	Ser	Leu	Ala	Pro	Met	Val	Leu	Ala	Pro	Pro	Thr	Lys
		115					120					125			
Leu	Leu	Ile	Leu	Asp	Gly	Asn	Ser	Leu	Leu	Pro	Glu	Asp	Leu	Val	Arg
	130					135					140				
Cys	Glu	Lys	Gly	Glu	Cys	Ala	Ile	Gln	Leu	Ser	Met	Glu	Ser	Glu	Asp
	145					150				155					160
Arg	Ile	Arg	Lys	Ala	Arg	Thr	Phe	Leu	Glu	Lys	Ile	Ala	Ser	Glu	His
				165					170					175	
Arg	Ala	Val	Tyr	Gly	Val	Thr	Thr	Gly	Phe	Gly	Thr	Phe	Ser	Asn	Val
			180					185					190		
Thr	Ile	Pro	Pro	Glu	Lys	Leu	Lys	Lys	Leu	Gln	Leu	Asn	Leu	Ile	Arg
		195					200					205			
Ser	His	Ala	Thr	Gly	Tyr	Gly	Glu	Pro	Leu	Ala	Pro	Asn	Arg	Ala	Arg
		210				215					220				
Met	Leu	Leu	Ala	Leu	Arg	Ile	Asn	Ile	Leu	Ala	Lys	Gly	His	Ser	Gly
	225				230					235					240
Ile	Ser	Val	Glu	Asn	Ile	Lys	Lys	Met	Ile	Ala	Ala	Phe	Asn	Ala	Phe
				245					250					255	
Cys	Val	Ser	Tyr	Val	Pro	Gln	Gln	Gly	Thr	Val	Gly	Cys	Ser	Gly	Asp
			260					265					270		
Leu	Cys	Pro	Leu	Ala	His	Leu	Ala	Leu	Gly	Leu	Leu	Gly	Glu	Gly	Lys
		275					280					285			
Met	Trp	Ser	Pro	Thr	Thr	Gly	Trp	Gln	Pro	Ala	Asp	Val	Val	Leu	Lys
	290					295					300				
Lys	Asn	Asn	Leu	Glu	Pro	Leu	Glu	Leu	Gly	Pro	Lys	Glu	Gly	Leu	Ala
	305				310					315					320
Leu	Ile	Asn	Gly	Thr	Gln	Met	Val	Thr	Ala	Leu	Gly	Ala	Tyr	Thr	Leu
				325					330					335	
Glu	Arg	Ala	His	Asn	Ile	Ala	Arg	Gln	Ala	Asp	Val	Ile	Ala	Ala	Leu
			340					345					350		

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Ser Leu Asp Val Leu Lys Gly Thr Thr Arg Ala Tyr Asp Pro Asp Ile
 355 360 365
 His Arg Ile Arg Pro His Arg Gly Gln Asn Leu Ser Ala Leu Arg Leu
 370 375 380
 Arg Ala Leu Leu His Ser Glu Ala Asn Pro Ser Gln Ile Ala Glu Ser
 385 390 395 400
 His Arg Asn Cys Thr Lys Val Gln Asp Ala Tyr Thr Leu Arg Cys Val
 405 410 415
 Pro Gln Val His Gly Val Val His Asp Thr Ile Glu Phe Val Arg Glu
 420 425 430
 Ile Ile Thr Thr Glu Met Asn Ser Ala Thr Asp Asn Pro Leu Val Phe
 435 440 445
 Ala Asp Arg Glu Glu Ile Ile Ser Gly Gly Asn Phe His Gly Glu Tyr
 450 455 460
 Pro Ala Lys Ala Leu Asp Phe Leu Ala Ile Ala Val Ala Glu Leu Ala
 465 470 475 480
 Gln Met Ser Glu Arg Arg Leu Glu Arg Leu Val Asn Lys Glu Leu Ser
 485 490 495
 Gly Leu Pro Thr Glu Leu Thr Pro Asp Gly Gly Leu Asn Ser Gly Phe
 500 505 510
 Met Thr Val Gln Leu Cys Ala Ala Ser Leu Val Ser Glu Asn Lys Val
 515 520 525
 Leu Cys His Pro Ser Ser Val Asp Ser Ile Pro Thr Ser Cys Asn Gln
 530 535 540
 Glu Asp His Val Ser Met Gly Gly Phe Ala Ala Arg Lys Ala Leu Thr
 545 550 555 560
 Val Val Glu His Val Glu Ala Val Leu Ala Met Glu Leu Leu Ala Ala
 565 570 575
 Cys Gln Gly Ile Glu Phe Leu Lys Pro Leu Ile Ser Thr Ala Pro Leu
 580 585 590
 His Lys Ile Tyr Gln Leu Val Arg Ser Val Ala Pro Pro Leu Asn Glu
 595 600 605
 Asp Arg Tyr Met Lys Pro Glu Ile Asp Ala Val Leu Glu Met Ile Arg
 610 615 620
 Glu Asn Arg Ile Trp Glu Ala Val Leu Pro His Leu Glu Thr Leu Glu
 625 630 635 640
 Ala Met Glu Glu Leu Asp Pro Asp Ala Leu Arg Gln Phe Thr Lys Thr
 645 650 655

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Pro Thr Gly Ile Val Gln Asp Arg Ser Met Ile Pro Ile Ser Asp Asp
660 665 670

Glu Glu Ser Ile Glu
675

<210> 40

<211> 508

<212> PRT

<213> Bacillus subtilis

<400> 40

Met Val Thr Leu Asp Gly Ser Ser Leu Thr Thr Ala Asp Val Ala Arg
1 5 10 15

Val Leu Phe Asp Phe Glu Glu Ala Ala Ala Ser Glu Glu Ser Met Glu
20 25 30

Arg Val Lys Lys Ser Arg Ala Ala Val Glu Arg Ile Val Arg Asp Glu
35 40 45

Lys Thr Ile Tyr Gly Ile Asn Thr Gly Phe Gly Lys Phe Ser Asp Val
50 55 60

Leu Ile Gln Lys Glu Asp Ser Ala Ala Leu Gln Leu Asn Leu Ile Leu
65 70 75 80

Ser His Ala Cys Gly Val Gly Asp Pro Phe Pro Glu Cys Val Ser Arg
85 90 95

Ala Met Leu Leu Leu Arg Ala Asn Ala Leu Leu Lys Gly Phe Ser Gly
100 105 110

Val Arg Ala Glu Leu Ile Glu Gln Leu Leu Ala Phe Leu Asn Lys Arg
115 120 125

Val His Pro Val Ile Pro Gln Gln Gly Ser Leu Gly Ala Ser Gly Asp
130 135 140

Leu Ala Pro Leu Ser His Leu Ala Leu Ala Leu Ile Gly Gln Gly Glu
145 150 155 160

Val Phe Phe Glu Gly Glu Arg Met Pro Ala Met Thr Gly Leu Lys Lys
165 170 175

Ala Gly Ile Gln Pro Val Thr Leu Thr Ser Lys Glu Gly Leu Ala Leu
180 185 190

Ile Asn Gly Thr Gln Ala Met Thr Ala Met Gly Val Val Ala Tyr Ile
195 200 205

Glu Ala Glu Lys Leu Ala Tyr Gln Thr Glu Arg Ile Ala Ser Leu Thr
210 215 220

Ile Glu Gly Leu Gln Gly Ile Ile Asp Ala Phe Asp Glu Asp Ile His
225 230 235 240

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Leu Ala Arg Gly Tyr Gln Glu Gln Ile Asp Val Ala Glu Arg Ile Arg
 245 250 255
 Phe Tyr Leu Ser Asp Ser Gly Leu Thr Thr Ser Gln Gly Glu Leu Arg
 260 265 270
 Val Gln Asp Ala Tyr Ser Leu Arg Cys Ile Pro Gln Val His Gly Ala
 275 280 285
 Thr Trp Gln Thr Leu Gly Tyr Val Lys Glu Lys Leu Glu Ile Glu Met
 290 295 300
 Asn Ala Ala Thr Asp Asn Pro Leu Ile Phe Asn Asp Gly Asp Lys Val
 305 310 315 320
 Ile Ser Gly Gly Asn Phe His Gly Gln Pro Ile Ala Phe Ala Met Asp
 325 330 335
 Phe Leu Lys Ile Ala Ile Ser Glu Leu Ala Asn Ile Ala Glu Arg Arg
 340 345 350
 Ile Glu Arg Leu Val Asn Pro Gln Leu Asn Asp Leu Pro Pro Phe Leu
 355 360 365
 Ser Pro His Pro Gly Leu Gln Ser Gly Ala Met Ile Met Gln Tyr Ala
 370 375 380
 Ala Ala Ser Leu Val Ser Glu Asn Lys Thr Leu Ala His Pro Ala Ser
 385 390 395 400
 Val Asp Ser Ile Pro Ser Ser Ala Asn Gln Glu Asp His Val Ser Met
 405 410 415
 Gly Thr Ile Ala Ala Arg His Ala Tyr Gln Val Ile Ala Asn Thr Arg
 420 425 430
 Arg Val Ile Ala Ile Glu Ala Ile Cys Ala Leu Gln Ala Val Glu Tyr
 435 440 445
 Arg Gly Ile Glu His Ala Ala Ser Tyr Thr Lys Gln Leu Phe Gln Glu
 450 455 460
 Met Arg Lys Val Val Pro Ser Ile Gln Gln Asp Arg Val Phe Ser Tyr
 465 470 475 480
 Asp Ile Glu Arg Leu Thr Asp Trp Leu Lys Lys Glu Ser Leu Ile Pro
 485 490 495
 Asp His Gln Asn Lys Glu Leu Arg Gly Met Asn Ile
 500 505

<210> 41

<211> 516

<212> PRT

<213> Streptomyces griseus

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<400> 41

Met	Asp	Met	His	Thr	Val	Val	Val	Gly	Thr	Ser	Gly	Thr	Thr	Ala	Glu
1				5					10					15	
Asp	Val	Val	Ala	Val	Ala	Arg	His	Gly	Ala	Arg	Val	Glu	Leu	Ser	Ala
			20					25					30		
Ala	Ala	Val	Glu	Ala	Leu	Ala	Ala	Ala	Arg	Leu	Ile	Val	Asp	Ala	Leu
		35						40				45			
Ala	Ala	Lys	Pro	Glu	Pro	Val	Tyr	Gly	Val	Ser	Thr	Gly	Phe	Gly	Ala
	50					55					60				
Leu	Ala	Ser	Arg	His	Ile	Gly	Thr	Glu	Leu	Arg	Ala	Gln	Leu	Gln	Arg
65					70					75					80
Asn	Ile	Val	Arg	Ser	His	Ala	Ala	Gly	Met	Gly	Pro	Arg	Val	Glu	Arg
				85					90					95	
Glu	Val	Val	Arg	Ala	Leu	Met	Phe	Leu	Arg	Leu	Lys	Thr	Val	Ala	Ser
			100					105					110		
Gly	His	Thr	Gly	Val	Arg	Pro	Glu	Val	Ala	Gln	Thr	Met	Ala	Asp	Val
		115					120					125			
Leu	Asn	Ala	Gly	Ile	Thr	Pro	Val	Val	His	Glu	Tyr	Gly	Ser	Leu	Gly
	130					135					140				
Cys	Ser	Gly	Asp	Leu	Ala	Pro	Leu	Ser	His	Cys	Ala	Leu	Thr	Leu	Met
145					150					155					160
Gly	Glu	Gly	Glu	Ala	Glu	Gly	Pro	Asp	Gly	Thr	Val	Arg	Pro	Ala	Gly
			165						170					175	
Glu	Leu	Leu	Ala	Ala	His	Gly	Ile	Ala	Pro	Val	Glu	Leu	Arg	Glu	Lys
			180					185					190		
Glu	Gly	Leu	Ala	Leu	Leu	Asn	Gly	Thr	Asp	Gly	Met	Leu	Gly	Met	Leu
		195					200					205			
Val	Met	Ala	Leu	Ala	Asp	Leu	Arg	Asn	Leu	Tyr	Thr	Ser	Ala	Asp	Ile
	210					215					220				
Thr	Ala	Ala	Leu	Ser	Leu	Glu	Ala	Leu	Leu	Gly	Thr	Asp	Lys	Val	Leu
225					230					235					240
Ala	Pro	Glu	Leu	His	Ala	Ile	Arg	Pro	His	Pro	Gly	Gln	Gly	Val	Ser
				245					250					255	
Ala	Asp	Asn	Met	Ser	Arg	Val	Leu	Ala	Gly	Ser	Gly	Leu	Thr	Gly	His
		260						265					270		
His	Gln	Asp	Asp	Ala	Pro	Arg	Val	Gln	Asp	Ala	Tyr	Ser	Val	Arg	Cys
		275					280					285			
Ala	Pro	Gln	Val	Asn	Gly	Ala	Gly	Arg	Asp	Thr	Leu	Asp	His	Ala	Ala
	290					295					300				

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Leu Val Ala Gly Arg Glu Leu Ala Ser Ser Val Asp Asn Pro Val Val
305 310 315 320

Leu Pro Asp Gly Arg Val Glu Ser Asn Gly Asn Phe His Gly Ala Pro
325 330 335

Val Ala Tyr Val Leu Asp Phe Leu Ala Ile Val Ala Ala Asp Leu Gly
340 345 350

Ser Ile Cys Glu Arg Arg Thr Asp Arg Leu Leu Asp Lys Asn Arg Ser
355 360 365

His Gly Leu Pro Pro Phe Leu Ala Asp Asp Ala Gly Val Asp Ser Gly
370 375 380

Leu Met Ile Ala Gln Tyr Thr Gln Ala Ala Leu Val Ser Glu Met Lys
385 390 395 400

Arg Leu Ala Val Pro Ala Ser Ala Asp Ser Ile Pro Ser Ser Ala Met
405 410 415

Gln Glu Asp His Val Ser Met Gly Trp Ser Ala Ala Arg Lys Leu Arg
420 425 430

Thr Ala Val Asp Asn Leu Ala Arg Ile Val Ala Val Glu Leu Tyr Ala
435 440 445

Ala Thr Arg Ala Ile Glu Leu Arg Ala Ala Glu Gly Leu Thr Pro Ala
450 455 460

Pro Ala Ser Glu Ala Val Val Ala Ala Leu Arg Ala Ala Gly Ala Glu
465 470 475 480

Gly Pro Gly Pro Asp Arg Phe Leu Ala Pro Asp Leu Ala Ala Ala Asp
485 490 495

Thr Phe Val Arg Glu Gly Arg Leu Val Ala Ala Val Glu Pro Val Thr
500 505 510

Gly Pro Leu Ala
515

<210> 42

<211> 511

<212> PRT

<213> Corynebacteriaceae sp.

<400> 42

Met Ala Ser Ala Pro Gln Ile Thr Leu Gly Leu Ser Gly Ala Thr Ala
1 5 10 15

Asp Asp Val Ile Ala Val Ala Arg His Glu Ala Arg Ile Ser Ile Ser
20 25 30

Pro Gln Val Leu Glu Glu Leu Ala Ser Val Arg Ala His Ile Asp Ala
35 40 45

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Leu Ala Ser Ala Asp Thr Pro Val Tyr Gly Ile Ser Thr Gly Phe Gly
 50 55 60
 Ala Leu Ala Thr Arg His Ile Ala Pro Glu Asp Arg Ala Lys Leu Gln
 65 70 75 80
 Arg Ser Leu Ile Arg Ser His Ala Ala Gly Met Gly Glu Pro Val Glu
 85 90 95
 Arg Glu Val Val Arg Ala Leu Met Phe Leu Arg Ala Lys Thr Leu Ala
 100 105 110
 Ser Gly Arg Ser Val Arg Pro Val Val Leu Glu Thr Met Val Gly Met
 115 120 125
 Leu Asn Ala Gly Ile Thr Pro Val Val Arg Glu Tyr Gly Ser Leu Gly
 130 135 140
 Cys Ser Gly Asp Leu Ala Pro Leu Ser His Cys Ala Leu Val Leu Met
 145 150 155 160
 Gly Glu Gly Glu Ala Thr Asp Ala His Gly Asp Ile Arg Pro Val Pro
 165 170 175
 Glu Leu Phe Ala Glu Ala Gly Leu Thr Pro Val Glu Leu Ala Glu Lys
 180 185 190
 Glu Gly Leu Ala Leu Val Asn Gly Thr Asp Gly Met Leu Gly Gln Leu
 195 200 205
 Ile Met Ala Leu Ala Asp Leu Asp Glu Leu Leu Asp Ile Ala Asp Ala
 210 215 220
 Thr Ala Ala Met Ser Val Glu Ala Gln Leu Gly Thr Asp Gln Val Phe
 225 230 235 240
 Arg Ala Glu Leu His Glu Pro Leu Arg Pro His Pro Gly Gln Gly Arg
 245 250 255
 Ser Ala Gln Asn Met Phe Ala Phe Leu Ala Asp Ser Pro Ile Val Ala
 260 265 270
 Ser His Arg Glu Gly Asp Gly Arg Val Gln Asp Ala Tyr Ser Leu Arg
 275 280 285
 Cys Ser Pro Gln Val Thr Gly Ala Ala Arg Asp Thr Ile Ala His Ala
 290 295 300
 Arg Leu Val Ala Thr Arg Glu Leu Ala Ala Ala Ile Asp Asn Pro Val
 305 310 315 320
 Val Leu Pro Ser Gly Glu Val Thr Ser Asn Gly Asn Phe His Gly Ala
 325 330 335
 Pro Val Ala Tyr Val Leu Asp Phe Leu Ala Ile Ala Val Ala Asp Leu
 340 345 350

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 T08120-54ZEEB60

Gly Ser Ile Ala Glu Arg Arg Thr Asp Arg Met Leu Asp Pro Ala Arg
 355 360 365
 Ser Arg Asp Leu Pro Ala Phe Leu Ala Asp Asp Pro Gly Val Asp Ser
 370 375 380
 Gly Met Met Ile Ala Gln Tyr Thr Gln Ala Gly Leu Val Ala Glu Asn
 385 390 395 400
 Lys Arg Leu Ala Val Pro Ala Val Asp Ser Ile Pro Ser Ser Ala Met
 405 410 415
 Gln Glu Asp His Val Ser Leu Gly Trp His Ala Ala Arg Lys Leu Pro
 420 425 430
 Thr Ser Val Ala Asn Leu Arg Arg Ile Leu Ala Val Glu Met Leu Ile
 435 440 445
 Ala Gly Arg Ala Leu Asp Leu Arg Ala Pro Leu Lys Pro Gly Pro Ala
 450 455 460
 Thr Gly Ala Val Leu Glu Val Leu Arg Ser Lys Val Ala Gly Pro Gly
 465 470 475 480
 Gln Asp Arg Phe Leu Ser Ala Glu Leu Glu Ala Ala Tyr Asp Leu Leu
 485 490 495
 Ala Asn Gly Ser Val His Lys Ala Leu Glu Ala His Leu Pro Glu
 500 505 510

<210> 43

<211> 513

<212> PRT

<213> Unknown Organism

<220>

<223> Description of Unknown Organism: 983831/HAL

<400> 43

Met Ala Ser Ala Pro Gln Ile Thr Leu Gly Leu Ser Gly Ala Thr Ala
 1 5 10 15
 Asp Asp Val Ile Ala Val Ala Arg His Glu Ala Arg Ile Ser Ile Ser
 20 25 30
 Pro Gln Val Leu Glu Glu Leu Ala Ser Val Arg Ala His Ile Asp Ala
 35 40 45
 Leu Ala Ser Ala Asp Thr Pro Val Tyr Gly Ile Ser Thr Gly Phe Gly
 50 55 60
 Ala Leu Ala Thr Arg His Ile Ala Pro Glu Asp Arg Ala Lys Leu Gln
 65 70 75 80
 Arg Ser Leu Ile Arg Ser His Ala Ala Gly Met Gly Glu Pro Val Glu
 85 90 95

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Arg Glu Val Val Arg Ala Leu Met Phe Leu Arg Ala Lys Thr Leu Ala
 100 105 110
 Ser Gly Arg Thr Gly Val Arg Pro Val Val Leu Glu Thr Met Val Gly
 115 120 125
 Met Leu Asn Ala Gly Ile Thr Pro Val Val Arg Glu Tyr Gly Ser Leu
 130 135 140
 Gly Cys Ser Gly Asp Leu Ala Pro Leu Ser His Cys Ala Leu Val Leu
 145 150 155 160
 Met Gly Glu Gly Glu Ala Thr Asp Ala His Gly Asp Ile Arg Pro Val
 165 170 175
 Pro Glu Leu Phe Ala Glu Ala Gly Leu Thr Pro Val Glu Leu Ala Glu
 180 185 190
 Lys Glu Gly Leu Ala Leu Val Asn Gly Thr Asp Gly Met Leu Gly Gln
 195 200 205
 Leu Ile Met Ala Leu Ala Asp Leu Asp Glu Leu Leu Asp Ile Ala Asp
 210 215 220
 Ala Thr Ala Ala Met Ser Val Glu Ala Gln Leu Gly Thr Asp Gln Val
 225 230 235 240
 Phe Arg Ala Glu Leu His Glu Pro Leu Arg Pro His Pro Gly Gln Gly
 245 250 255
 Arg Ser Ala Gln Asn Met Phe Ala Phe Leu Ala Asp Ser Pro Ile Val
 260 265 270
 Ala Ser His Arg Glu Gly Asp Gly Arg Val Gln Asp Ala Tyr Ser Leu
 275 280 285
 Arg Cys Ser Pro Gln Val Thr Gly Ala Ala Arg Asp Thr Ile Ala His
 290 295 300
 Ala Arg Leu Val Ala Thr Arg Glu Leu Ala Ala Ala Ile Asp Asn Pro
 305 310 315 320
 Val Val Leu Pro Ser Gly Glu Val Thr Ser Asn Gly Asn Phe His Gly
 325 330 335
 Ala Pro Val Ala Tyr Val Leu Asp Phe Leu Ala Ile Ala Val Ala Asp
 340 345 350
 Leu Gly Ser Ile Ala Glu Arg Arg Thr Asp Arg Met Leu Asp Pro Ala
 355 360 365
 Arg Ser Arg Asp Leu Pro Ala Phe Leu Ala Asp Asp Pro Gly Val Asp
 370 375 380
 Ser Gly Met Met Ile Ala Gln Tyr Thr Gln Ala Gly Leu Val Ala Glu
 385 390 395 400

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Asn Lys Arg Leu Ala Val Pro Ala Ser Val Asp Ser Ile Pro Ser Ser
 405 410 415
 Ala Met Gln Glu Asp His Val Ser Leu Gly Trp His Ala Ala Arg Lys
 420 425 430
 Leu Arg Thr Ser Val Ala Asn Leu Arg Arg Ile Leu Ala Val Glu Met
 435 440 445
 Leu Ile Ala Gly Arg Ala Leu Asp Leu Arg Ala Pro Leu Lys Pro Gly
 450 455 460
 Pro Ala Thr Gly Ala Val Leu Glu Val Leu Arg Ser Lys Val Ala Gly
 465 470 475 480
 Pro Gly Gln Asp Arg Phe Leu Ser Ala Glu Leu Glu Ala Ala Tyr Asp
 485 490 495
 Leu Leu Ala Asn Gly Ser Val His Lys Ala Leu Glu Ala His Leu Pro
 500 505 510

Ala

<210> 44
 <211> 513
 <212> PRT
 <213> Streptomyces coelicolor

<400> 44
 Met Ala Ser Met His Thr Val Val Val Gly Thr Ser Gly Val Thr Ala
 1 5 10 15
 Ser Asp Val Leu Ala Val Ala Arg Ala Gly Ala Arg Ile Glu Leu Ser
 20 25 30
 Glu Glu Ala Val Ala Ala Leu Ala Ala Arg Ser Val Val Asp Ala
 35 40 45
 Leu Ala Ala Lys Pro Asp Pro Val Tyr Gly Val Ser Thr Gly Phe Gly
 50 55 60
 Ala Leu Ala Thr Arg His Ile Ser Pro Glu Leu Arg Gly Arg Leu Gln
 65 70 75 80
 Arg Asn Ile Val Arg Ser His Ala Ala Gly Met Gly Pro Arg Val Glu
 85 90 95
 Arg Glu Val Val Arg Ala Leu Met Phe Leu Arg Leu Lys Thr Val Cys
 100 105 110
 Ser Gly Arg Thr Gly Val Arg Pro Glu Val Ala Gln Thr Met Ala Asp
 115 120 125
 Val Leu Asn Ala Gly Ile Thr Pro Val Val His Glu Tyr Gly Ser Leu
 130 135 140

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Gly	Cys	Ser	Gly	Asp	Leu	Ala	Pro	Leu	Ser	His	Cys	Ala	Leu	Thr	Leu	145	150	155	160
Met	Gly	Glu	Gly	Asp	Ala	Glu	Gly	Pro	Asp	Gly	Thr	Val	Arg	Pro	Ala	165	170	175	
Gly	Glu	Leu	Leu	Ala	Ala	His	Gly	Ile	Ala	Pro	Val	Glu	Leu	Arg	Glu	180	185	190	
Lys	Glu	Gly	Leu	Ala	Leu	Leu	Asn	Gly	Thr	Asp	Gly	Met	Leu	Gly	Met	195	200	205	
Leu	Val	Met	Ala	Leu	Ala	Asp	Leu	Asp	Thr	Leu	Tyr	Lys	Ser	Ala	Asp	210	215	220	
Ile	Thr	Ala	Ala	Leu	Thr	Met	Glu	Ala	Leu	Leu	Gly	Thr	Asp	Arg	Val	225	230	235	240
Leu	Ala	Pro	Glu	Leu	His	Ala	Pro	Ile	Arg	Pro	His	Pro	Gly	Gln	Ala	245	250	255	
Ala	Ser	Ala	Ala	Asn	Met	Ala	Ala	Val	Leu	Lys	Gly	Ser	Gly	Leu	Thr	260	265	270	
Gly	His	His	Gln	Asp	Asp	Ala	Pro	Arg	Val	Gln	Asp	Ala	Tyr	Ser	Val	275	280	285	
Arg	Cys	Ala	Pro	Gln	Val	Ala	Gly	Ala	Gly	Arg	Asp	Thr	Met	Ala	His	290	295	300	
Ala	Gly	Leu	Val	Ala	Glu	Arg	Glu	Leu	Ala	Ala	Ala	Val	Asp	Asn	Pro	305	310	315	320
Val	Val	Leu	Pro	Asp	Gly	Arg	Val	Glu	Ser	Asn	Gly	Asn	Phe	His	Gly	325	330	335	
Ala	Pro	Val	Ala	Tyr	Val	Leu	Asp	Phe	Leu	Ala	Val	Ala	Val	Ala	Asp	340	345	350	
Leu	Gly	Ser	Ile	Ala	Glu	Arg	Arg	Thr	Asp	Arg	Leu	Leu	Asp	Lys	Asn	355	360	365	
Arg	Ser	His	Gly	Leu	Pro	Pro	Phe	Leu	Ala	Asp	Asp	Ala	Gly	Val	Asp	370	375	380	
Ser	Gly	Leu	Met	Ile	Ala	Gln	Tyr	Thr	Gln	Ala	Ala	Leu	Val	Gly	Glu	385	390	395	400
Leu	Lys	Arg	Leu	Ala	Val	Pro	Ala	Ser	Ala	Asp	Ser	Ile	Pro	Ser	Ser	405	410	415	
Ala	Met	Gln	Glu	Asp	His	Val	Ser	Met	Gly	Trp	Ser	Ala	Ala	Arg	Lys	420	425	430	
Leu	Arg	Thr	Ala	Val	Asp	Asn	Leu	Ala	Arg	Val	Ile	Ala	Val	Glu	Leu	435	440	445	

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Tyr Ala Ala Thr Arg Ala Ile Gln Leu Arg Glu Gly Leu Thr Pro Ala
 450 455 460
 Pro Ala Ser Gln Ala Val Val Glu Ala Val Arg Ala Ala Val Glu Gly
 465 470 475 480
 Pro Gly Pro Asp Arg His Leu Ala Pro Asp Leu Ala Ala Ala Asp Ala
 485 490 495
 Phe Val Arg Ala Gly His Leu Val Ala Ala Ala Glu Ser Val Thr Gly
 500 505 510
 Pro

<210> 45
 <211> 513
 <212> PRT
 <213> Streptomyces griseus

<400> 45
 Met Met Asp Met His Thr Val Val Val Gly Thr Ser Gly Thr Thr Ala
 1 5 10 15
 Glu Asp Val Val Ala Val Ala Arg His Gly Ala Arg Val Glu Leu Ser
 20 25 30
 Ala Ala Ala Val Glu Ala Leu Ala Ala Arg Leu Ile Val Asp Ala
 35 40 45
 Leu Ala Ala Lys Pro Glu Pro Val Tyr Gly Val Ser Thr Gly Phe Gly
 50 55 60
 Ala Leu Ala Ser Arg His Ile Gly Thr Glu Leu Arg Ala Gln Leu Gln
 65 70 75 80
 Arg Asn Ile Val Arg Ser His Ala Ala Gly Met Gly Pro Arg Val Glu
 85 90 95
 Arg Glu Val Val Arg Ala Leu Met Phe Leu Arg Leu Lys Thr Val Ala
 100 105 110
 Ser Gly His Thr Gly Val Arg Pro Glu Val Ala Gln Thr Met Ala Asp
 115 120 125
 Val Leu Asn Ala Gly Ile Thr Pro Val Val His Glu Tyr Gly Ser Leu
 130 135 140
 Gly Cys Ser Gly Asp Leu Ala Pro Leu Ser His Cys Ala Leu Thr Leu
 145 150 155 160
 Met Gly Glu Gly Glu Ala Glu Gly Pro Asp Gly Thr Val Arg Pro Ala
 165 170 175
 Gly Glu Leu Leu Ala Ala His Gly Ile Ala Pro Val Glu Leu Arg Glu
 180 185 190

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Lys Glu Gly Leu Ala Leu Leu Asn Gly Thr Asp Gly Met Leu Gly Met
 195 200 205
 Leu Val Met Ala Leu Ala Asp Leu Arg Asn Leu Tyr Thr Ser Ala Asp
 210 215 220
 Ile Thr Ala Ala Leu Ser Leu Glu Ala Leu Leu Gly Thr Asp Lys Val
 225 230 235 240
 Leu Ala Pro Glu Leu His Ala Pro Ile Arg Pro His Pro Gly Gln Gly
 245 250 255
 Val Ser Ala Asp Asn Met Ser Arg Val Leu Ala Gly Ser Gly Leu Thr
 260 265 270
 Gly His His Gln Asp Asp Ala Pro Arg Val Gln Asp Ala Tyr Ser Val
 275 280 285
 Arg Cys Ala Pro Gln Val Asn Gly Ala Gly Arg Asp Thr Leu Asp His
 290 295 300
 Ala Ala Leu Val Ala Gly Arg Glu Leu Ala Ser Ser Val Asp Asn Pro
 305 310 315 320
 Val Val Leu Pro Asp Gly Arg Val Glu Ser Asn Gly Asn Phe His Gly
 325 330 335
 Ala Pro Val Ala Tyr Val Leu Asp Phe Leu Ala Ile Val Ala Ala Asp
 340 345 350
 Leu Gly Ser Ile Cys Glu Arg Arg Thr Asp Arg Leu Leu Asp Lys Asn
 355 360 365
 Arg Ser His Gly Leu Pro Pro Phe Leu Ala Asp Asp Ala Gly Val Asp
 370 375 380
 Ser Gly Leu Met Ile Ala Gln Tyr Thr Gln Ala Ala Leu Val Ser Glu
 385 390 395 400
 Met Lys Arg Leu Ala Val Pro Ala Ser Ala Asp Ser Ile Pro Ser Ser
 405 410 415
 Ala Met Gln Glu Asp His Val Ser Met Gly Trp Ser Ala Ala Arg Lys
 420 425 430
 Leu Arg Thr Ala Val Asp Asn Leu Ala Arg Ile Val Ala Val Glu Leu
 435 440 445
 Tyr Ala Ala Thr Arg Ala Ile Glu Leu Arg Ala Ala Leu Thr Pro Ala
 450 455 460
 Pro Ala Ser Glu Ala Val Val Ala Ala Leu Arg Ala Ala Gly Ala Gly
 465 470 475 480
 Pro Gly Pro Asp Arg Phe Leu Ala Pro Asp Leu Ala Ala Ala Asp Thr
 485 490 495

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 108720-542E860

Phe Val Arg Glu Gly Arg Leu Val Ala Ala Val Glu Pro Val Thr Gly
 500 505 510

Pro

<210> 46

<211> 513

<212> PRT

<213> Deinococcus radiodurans

<400> 46

Met Ala Ser Ala Pro Gln Ile Met Ile Leu Asp Arg Asp Leu Asn Leu
 1 5 10 15

Glu Gln Phe Ile Ser Val Val Arg His Gly Glu Gln Val Glu Leu Ser
 20 25 30

Ala Ala Ala Arg Glu Arg Ile Ala Arg Ala Arg Thr Val Ile Glu Gln
 35 40 45

Ile Val Glu Gly Asp Thr Pro Ile Tyr Gly Val Asn Thr Gly Phe Gly
 50 55 60

Lys Phe Glu Asn Val Gln Ile Asp Arg Ser Gln Leu Ala Gln Leu Gln
 65 70 75 80

His Asn Leu Ile Val Ser His Ala Ile Gly Met Gly Glu Pro Leu Pro
 85 90 95

Ala Glu Val Val Arg Gly Met Leu Leu Leu Arg Ala Gln Ser Leu Ser
 100 105 110

Leu Gly His Ser Gly Val Arg Val Glu Val Val Glu Leu Leu Leu Ala
 115 120 125

Leu Leu Asn Ala Asp Ala Leu Pro Val Val Pro Ser Gln Gly Ser Val
 130 135 140

Gly Ala Ser Gly Asp Leu Ala Pro Leu Ala His Leu Ala Leu Gly Leu
 145 150 155 160

Ile Gly Leu Gly Asp Ile Thr Glu Tyr Gln Gly Gln Val Arg Pro Ala
 165 170 175

Ala Asp Val Leu Ala Glu Leu Gly Leu Ser Pro Val Gln Leu Gln Ala
 180 185 190

Lys Glu Gly Leu Ala Leu Ile Asn Gly Thr Gln Leu Met Gly Ser Leu
 195 200 205

Leu Ala Leu Ala Leu His Asp Ala Gln Val Leu Leu Gly Thr Ala Asn
 210 215 220

Leu Ala Ala Ala Met Thr Val Glu Ala Arg Tyr Gly Ser His Arg Pro
 225 230 235 240

0983745-07301

Phe Gln Pro Asp Val His Val Gly Leu Arg Pro His Pro Gly Ala Leu
 245 250 255
 Ala Val Ala Ala Glu Leu Arg Glu Phe Leu Ala Gly Ser Glu Ile Ala
 260 265 270
 Pro Ser His Leu Thr Gly Asp Gly Lys Val Gln Asp Ala Tyr Ser Leu
 275 280 285
 Arg Ala Val Pro Gln Val His Gly Ala Thr Trp Asp Ala Leu Ala Gln
 290 295 300
 Ala Glu Arg Val Leu Ala Val Glu Phe Ala Ser Val Thr Asp Asn Pro
 305 310 315 320
 Leu Ile Phe Pro Thr Gly Glu Val Val Ser Gly Gly Asn Phe His Gly
 325 330 335
 Gln Pro Leu Ala Val Thr Ile Asp Ala Leu Lys Val Ala Val Ala Glu
 340 345 350
 Leu Gly Ser Ile Ser Glu Arg Arg Thr Glu Gln Leu Leu Asn Pro Ala
 355 360 365
 Leu Ser Arg Gly Leu Pro Ala Phe Leu Thr Pro Asn Gly Gly Leu Asn
 370 375 380
 Ser Gly Phe Met Ile Ala Gln Tyr Thr Ser Ala Ala Leu Val Ser Glu
 385 390 395 400
 Asn Lys Val Leu Ser His Pro Ala Ser Val Asp Ser Ile Pro Thr Ser
 405 410 415
 Ala Asn Gln Glu Asp His Val Ser Met Gly Ala His Ala Ala Arg Gln
 420 425 430
 Leu Arg Gln Ile Val Ala Asn Val Gln Thr Val Leu Ser Ile Glu Leu
 435 440 445
 Leu Cys Ala Ala Gln Gly Leu Asp Phe Gln Gln Pro Leu Arg Ala Gly
 450 455 460
 Arg Gly Val Gln Ala Ala Tyr Glu Tyr Val Arg Thr Phe Val Pro Thr
 465 470 475 480
 Leu Thr Glu Asp Arg Tyr Phe Arg Pro Asp Leu Leu Arg Leu Arg Gly
 485 490 495
 Glu Leu Val Ser Gly Arg Val Ala Gln Ala Ala Asp Thr Gln Ala Pro
 500 505 510

Ala

<210> 47
 <211> 513
 <212> PRT

0963745 542E860
T08T20 071801

<213> Agrobacterium rhizogenes

<400> 47

Met	Ala	Ser	Ala	Pro	Gln	Ile	Thr	Leu	Gly	Leu	Ser	Gly	Val	Pro	Leu
1				5					10					15	
His	His	Leu	Ala	Asp	Ile	Tyr	Trp	Asn	Asn	Gly	Ser	Ala	Lys	Leu	Asp
			20					25					30		
Pro	Ser	Phe	Asp	Ala	Ala	Val	Leu	Lys	Gly	Ala	Ala	Arg	Ile	Ala	Glu
		35					40					45			
Ile	Ala	Ala	Gly	Asn	Ala	Pro	Val	Tyr	Gly	Ile	Asn	Thr	Gly	Phe	Gly
	50					55					60				
Lys	Leu	Ala	Ser	Ile	Lys	Ile	Asp	Ala	Ala	Asp	Leu	Ala	Thr	Leu	Gln
65					70					75					80
Arg	Asn	Leu	Ile	Leu	Ser	His	Cys	Cys	Gly	Val	Gly	Ala	Pro	Leu	Pro
				85					90					95	
Glu	Asn	Val	Val	Arg	Leu	Ile	Met	Ala	Leu	Lys	Leu	Ile	Ser	Leu	Gly
			100					105					110		
Arg	Gly	Ala	Ser	Gly	Val	Arg	Ile	Glu	Leu	Ile	Arg	Leu	Ile	Glu	Gly
		115					120					125			
Met	Leu	Glu	Lys	Gly	Val	Ile	Pro	Val	Ile	Pro	Glu	Lys	Gly	Ser	Val
	130					135					140				
Gly	Ala	Ser	Gly	Asp	Leu	Ala	Pro	Leu	Ala	His	Met	Ser	Ala	Thr	Met
145					150					155					160
Met	Gly	Glu	Gly	Glu	Ala	Phe	Asp	Tyr	Gln	Gly	Val	Gln	Met	Pro	Ser
				165					170					175	
Lys	Asp	Ala	Leu	Ala	Lys	Ala	Gly	Leu	Ser	Pro	Val	Val	Leu	Ala	Ala
			180					185					190		
Lys	Glu	Gly	Leu	Ala	Leu	Ile	Asn	Gly	Thr	Gln	Thr	Ser	Thr	Ala	Leu
		195					200					205			
Ala	Leu	Ala	Gly	Leu	Phe	Arg	Ala	His	Arg	Ala	Ala	Gln	Ser	Ala	Leu
	210					215					220				
Val	Thr	Gly	Ala	Leu	Ser	Thr	Asp	Ala	Ala	Met	Gly	Ser	Ser	Ala	Pro
225					230					235					240
Phe	His	Pro	Asp	Ile	His	Thr	Pro	Leu	Arg	Gly	His	Lys	Gly	Gln	Ile
				245					250					255	
Asp	Ala	Gly	Ser	Ala	Leu	Arg	Asn	Leu	Leu	Gln	Gly	Ser	Glu	Ile	Arg
			260					265					270		
Glu	Ser	His	Ile	Glu	Gly	Asp	Glu	Arg	Val	Gln	Asp	Pro	Tyr	Cys	Ile
		275					280					285			

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Arg Cys Gln Pro Gln Val Asp Gly Ala Cys Leu Asp Leu Leu Ala Ser
 290 295 300
 Val Ala Arg Thr Leu Glu Ile Glu Ala Asn Ala Val Thr Asp Asn Pro
 305 310 315 320
 Leu Val Leu Ser Asp Asn Ser Val Val Ser Gly Gly Asn Phe His Ala
 325 330 335
 Glu Pro Val Ala Phe Ala Ala Asp Gln Thr Ala Leu Ala Val Cys Glu
 340 345 350
 Ile Gly Ala Ile Ala Gln Arg Arg Ile Ala Leu Leu Val Asp Pro Ala
 355 360 365
 Leu Ser Tyr Gly Leu Pro Ala Phe Leu Ser Lys Lys Pro Gly Leu Asn
 370 375 380
 Ser Gly Leu Met Ile Ala Glu Val Thr Ser Ala Ala Leu Met Ser Glu
 385 390 395 400
 Asn Lys Gln Met Ser His Pro Ala Ser Val Asp Ser Thr Pro Thr Ser
 405 410 415
 Ala Asn Gln Glu Asp His Val Ser Met Ala Cys His Gly Ala Arg Arg
 420 425 430
 Leu Leu Ala Met Thr Asp Asn Leu Phe Gly Ile Leu Gly Ile Glu Ala
 435 440 445
 Leu Ala Ala Val Gln Gly Val Glu Leu Arg Gly Pro Leu Lys Thr Ser
 450 455 460
 Pro Glu Leu Glu Lys Ala Ala Ala Val Leu Arg Ser Ala Val Pro Val
 465 470 475 480
 Leu Glu Asp Asp Arg Tyr Met Ala Thr Asp Leu Lys Ala Ala Ile Glu
 485 490 495
 Val Val Ala Ser Gly Ala Leu Val Ser Ala Ile Ser Ser Gly Leu Pro
 500 505 510
 Val

<210> 48

<211> 513

<212> PRT

<213> Agrobacterium rhizogenes

<400> 48

Met Ala Ser Ala Pro Gln Ile Thr Leu Gly Leu Ser Gly Val Pro Leu
 1 5 10 15

His His Leu Ala Asp Ile Tyr Trp Asn Asn Gly Ser Ala Lys Leu Asp
 20 25 30

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 T08T20" 542E350

Pro Ser Phe Asp Ala Ala Val Leu Lys Gly Ala Ala Arg Ile Ala Glu
 35 40 45
 Ile Ala Ala Gly Asn Ala Pro Val Tyr Gly Ile Asn Thr Gly Phe Gly
 50 55 60
 Lys Leu Ala Ser Ile Lys Ile Asp Ala Ala Asp Leu Ala Thr Leu Gln
 65 70 75 80
 Arg Asn Leu Ile Leu Ser His Cys Cys Gly Val Gly Ala Pro Leu Pro
 85 90 95
 Glu Asn Val Val Arg Leu Ile Met Ala Leu Lys Leu Ile Ser Leu Gly
 100 105 110
 Arg Gly Ala Ser Gly Val Arg Ile Glu Leu Ile Arg Leu Ile Glu Gly
 115 120 125
 Met Leu Glu Lys Gly Val Ile Pro Val Ile Pro Glu Lys Gly Ser Val
 130 135 140
 Gly Ala Ser Gly Asp Leu Ala Pro Leu Ala His Met Ser Ala Thr Met
 145 150 155 160
 Met Gly Glu Gly Glu Ala Phe Asp Tyr Gln Gly Val Gln Met Pro Ser
 165 170 175
 Lys Asp Ala Leu Ala Lys Ala Gly Leu Ser Pro Val Val Leu Ala Ala
 180 185 190
 Lys Glu Gly Leu Ala Leu Ile Asn Gly Thr Gln Thr Ser Thr Ala Leu
 195 200 205
 Ala Leu Ala Gly Leu Phe Arg Ala His Arg Ala Ala Gln Ser Ala Leu
 210 215 220
 Val Thr Gly Ala Leu Ser Thr Asp Ala Ala Met Gly Ser Ser Ala Pro
 225 230 235 240
 Phe His Pro Asp Ile His Thr Pro Leu Arg Gly His Lys Gly Gln Ile
 245 250 255
 Asp Ala Gly Ser Ala Leu Arg Asn Leu Leu Gln Gly Ser Glu Ile Arg
 260 265 270
 Glu Ser His Ile Glu Gly Asp Glu Arg Val Gln Asp Pro Tyr Cys Ile
 275 280 285
 Arg Cys Gln Pro Gln Val Asp Gly Ala Cys Leu Asp Leu Leu Ala Ser
 290 295 300
 Val Ala Arg Thr Leu Glu Ile Glu Ala Asn Ala Val Thr Asp Asn Pro
 305 310 315 320
 Leu Val Leu Ser Asp Asn Ser Val Val Ser Gly Gly Asn Phe His Ala
 325 330 335

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Glu Pro Val Ala Phe Ala Ala Asp Gln Thr Ala Leu Ala Val Cys Glu
 340 345 350
 Ile Gly Ala Ile Ala Gln Arg Arg Ile Ala Leu Leu Val Asp Pro Ala
 355 360 365
 Leu Ser Tyr Gly Leu Pro Ala Phe Leu Ser Lys Lys Pro Gly Leu Asn
 370 375 380
 Ser Gly Leu Met Ile Ala Glu Val Thr Ser Ala Ala Leu Met Ser Glu
 385 390 395 400
 Asn Lys Gln Met Ser His Pro Ala Ser Val Asp Ser Thr Pro Thr Ser
 405 410 415
 Ala Asn Gln Glu Asp His Val Ser Met Ala Cys His Gly Ala Arg Arg
 420 425 430
 Leu Leu Ala Met Thr Asp Asn Leu Phe Gly Ile Leu Gly Ile Glu Ala
 435 440 445
 Leu Ala Ala Val Gln Gly Val Glu Leu Arg Gly Pro Leu Lys Thr Ser
 450 455 460
 Pro Glu Leu Glu Lys Ala Ala Ala Val Leu Arg Ser Ala Val Pro Val
 465 470 475 480
 Leu Glu Asp Asp Arg Tyr Met Ala Thr Asp Leu Lys Ala Ala Ile Glu
 485 490 495
 Val Val Ala Ser Gly Ala Leu Val Ser Ala Ile Ser Ser Gly Leu Pro
 500 505 510
 Val

<210> 49
 <211> 513
 <212> PRT
 <213> Bacillus subtilis

<400> 49
 Met Ala Ser Ala Pro Met Val Thr Leu Asp Gly Ser Ser Leu Thr Thr
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 Ala Asp Val Ala Arg Val Leu Phe Asp Phe Glu Glu Ala Ala Ala Ser
 20 25 30
 Glu Glu Ser Met Glu Arg Val Lys Lys Ser Arg Ala Ala Val Glu Arg
 35 40 45
 Ile Val Arg Asp Glu Lys Thr Ile Tyr Gly Ile Asn Thr Gly Phe Gly
 50 55 60
 Lys Phe Ser Asp Val Leu Ile Gln Lys Glu Asp Ser Ala Ala Leu Gln
 65 70 75 80

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Leu Asn Leu Ile Leu Ser His Ala Cys Gly Val Gly Asp Pro Phe Pro
 85 90 95
 Glu Cys Val Ser Arg Ala Met Leu Leu Arg Ala Asn Ala Leu Leu
 100 105 110
 Lys Gly Phe Ser Gly Val Arg Ala Glu Leu Ile Glu Gln Leu Leu Ala
 115 120 125
 Phe Leu Asn Lys Arg Val His Pro Val Ile Pro Gln Gln Gly Ser Leu
 130 135 140
 Gly Ala Ser Gly Asp Leu Ala Pro Leu Ser His Leu Ala Leu Ala Leu
 145 150 155 160
 Ile Gly Gln Gly Glu Val Phe Asp Phe Glu Gly Glu Arg Met Pro Ala
 165 170 175
 Met Thr Gly Leu Lys Lys Ala Gly Ile Gln Pro Val Thr Leu Thr Ser
 180 185 190
 Lys Glu Gly Leu Ala Leu Ile Asn Gly Thr Gln Ala Met Thr Ala Met
 195 200 205
 Gly Val Val Ala Tyr Ile Glu Ala Glu Lys Leu Ala Tyr Gln Thr Glu
 210 215 220
 Arg Ile Ala Ser Leu Thr Ile Glu Gly Leu Gln Gly Ile Ile Asp Ala
 225 230 235 240
 Phe Asp Glu Asp Ile His Leu Ala Leu Arg Gly Tyr Gln Glu Gln Ile
 245 250 255
 Asp Val Ala Glu Arg Ile Arg Phe Tyr Leu Ser Asp Ser Gly Leu Thr
 260 265 270
 Thr Ser His Arg Gln Gly Glu Leu Arg Val Gln Asp Ala Tyr Ser Leu
 275 280 285
 Arg Cys Ile Pro Gln Val His Gly Ala Thr Trp Gln Thr Leu Gly Tyr
 290 295 300
 Val Lys Glu Lys Leu Glu Ile Glu Met Asn Ala Ala Thr Asp Asn Pro
 305 310 315 320
 Leu Ile Phe Asn Asp Gly Asp Val Ile Ser Gly Gly Asn Phe His Gly
 325 330 335
 Gln Pro Ile Ala Phe Ala Met Asp Phe Leu Lys Ile Ala Ile Ser Glu
 340 345 350
 Leu Ala Asn Ile Ala Glu Arg Arg Ile Glu Arg Leu Val Asn Pro Gln
 355 360 365
 Leu Asn Arg Asp Leu Pro Pro Phe Leu Ser Pro His Pro Gly Leu Gln
 370 375 380

003345 01501
 103120 5422360

Ser Gly Ala Met Ile Met Gln Tyr Ala Ala Ala Ser Leu Val Ser Glu
385 390 395 400

Asn Lys Thr Leu Ala His Pro Ala Ser Val Asp Ser Ile Pro Ser Ser
405 410 415

Ala Asn Gln Glu Asp His Val Ser Met Gly Thr Ile Ala Ala Arg His
420 425 430

Ala Tyr Gln Val Ile Ala Asn Thr Arg Arg Val Ile Ala Ile Glu Ala
435 440 445

Ile Cys Ala Leu Gln Ala Val Glu Tyr Arg Gly Ile Glu His Ala Ala
450 455 460

Ser Tyr Thr Lys Gln Leu Phe Gln Glu Met Arg Lys Val Val Pro Ser
465 470 475 480

Ile Gln Gln Asp Arg Val Phe Ser Tyr Asp Ile Glu Arg Leu Thr Asp
485 490 495

Trp Leu Lys Lys Glu Ser Leu Ile Pro Asp His Gln Asn Lys Glu Leu
500 505 510

Arg

<210> 50

<211> 513

<212> PRT

<213> *Vibrio cholerae*

<400> 50

Met Ala Ser Met Leu His Leu Met Ile Lys Pro Gly Gln Leu Ser Leu
1 5 10 15

Lys Gln Leu Arg Gln Val Ser Arg Ser Pro Val Val Leu Ser Leu Asp
20 25 30

Pro Glu Ala Ile Pro Ala Ile Ala Glu Ser Ala Gln Val Val Glu Gln
35 40 45

Val Ile Ser Glu Gly Arg Thr Val Tyr Gly Ile Asn Thr Gly Phe Gly
50 55 60

Leu Leu Ala Asn Thr Lys Ile Ala Pro Gln Asp Leu Glu Thr Leu Gln
65 70 75 80

Lys Ser Ile Val Leu Ser His Ala Ala Gly Ile Gly Glu Leu Met Ser
85 90 95

Asp Glu Thr Val Arg Leu Met Met Leu Leu Lys Ile Asn Ser Leu Ala
100 105 110

Arg Gly Tyr Ser Gly Ile Arg Leu Glu Val Ile Gln Ala Leu Ile Glu
115 120 125

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Leu	Val	Asn	Asn	Gln	Ile	Tyr	Pro	Cys	Val	Pro	Lys	Lys	Gly	Ser	Val
130						135					140				
Gly	Ala	Ser	Gly	Asp	Leu	Ala	Pro	Leu	Ala	His	Met	Ser	Thr	Val	Leu
145					150					155					160
Leu	Gly	Glu	Gly	Gln	Ala	Arg	Asp	Tyr	Asn	Gly	Lys	Ile	Ile	Ser	Gly
				165					170					175	
Leu	Glu	Ala	Met	Lys	Ile	Ala	Gly	Leu	Glu	Pro	Ile	Thr	Leu	Ala	Pro
			180					185					190		
Lys	Glu	Gly	Leu	Ala	Leu	Leu	Asn	Gly	Thr	Gln	Ala	Ser	Thr	Ala	Phe
		195					200					205			
Ala	Leu	Glu	Gly	Leu	Phe	Val	Ala	Glu	Asp	Leu	Phe	Ala	Ser	Ala	Thr
		210				215					220				
Val	Cys	Gly	Ala	Met	Ser	Val	Glu	Ala	Ala	Leu	Gly	Ser	Arg	Arg	Pro
225					230					235					240
Phe	Asp	Pro	Arg	Ile	His	Arg	Pro	Val	Arg	Gly	His	Arg	Thr	Gln	Met
				245					250					255	
Asp	Ala	Ala	Thr	Ala	Tyr	Arg	His	Leu	Leu	Val	Ser	Ser	Glu	Ile	Gly
			260					265					270		
Gln	Ser	His	Ser	Asn	Cys	Glu	Gly	Lys	Val	Gln	Asp	Pro	Tyr	Ser	Leu
		275					280					285			
Arg	Cys	Gln	Pro	Gln	Val	Met	Gly	Ala	Cys	Leu	Gln	Gln	Ile	Arg	Ser
		290				295					300				
Ala	Ala	Glu	Val	Leu	Glu	Val	Glu	Ala	Asn	Ser	Val	Ser	Asp	Asn	Pro
305					310					315					320
Leu	Val	Phe	Ala	Asp	Gly	Asp	Ile	Ile	Ser	Gly	Gly	Asn	Phe	His	Ala
				325					330					335	
Glu	Pro	Val	Ala	Met	Ala	Ala	Asp	Asn	Leu	Ala	Leu	Ala	Ile	Ala	Glu
			340					345					350		
Ile	Gly	Ser	Leu	Ser	Glu	Arg	Arg	Met	Ala	Leu	Leu	Ile	Asp	Ser	Ala
		355					360					365			
Leu	Ser	Lys	Asp	Leu	Pro	Pro	Phe	Leu	Val	Asp	Asn	Gly	Gly	Val	Asn
		370				375					380				
Ser	Gly	Phe	Met	Ile	Ala	Gln	Val	Thr	Ala	Ala	Ala	Leu	Ala	Ser	Glu
385					390					395					400
Asn	Lys	Thr	Leu	Ala	His	Pro	Ala	Ser	Val	Asp	Ser	Leu	Pro	Thr	Ser
				405					410					415	
Ala	Asn	Gln	Glu	Asp	His	Val	Ser	Met	Ala	Thr	Phe	Ala	Ala	Arg	Arg
			420					425					430		

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<210> 51
<211> 513
<212> PRT
<213> Pseudomonas aeruginosa

<400> 51
Met Ala Ser Ala Met Ser Leu His Leu Lys Pro Gly Gln Leu Thr Leu
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Ala Asp Leu Arg Gln Ala Tyr Leu Ala Pro Val Arg Leu Ser Leu Asp
          20           25           30
Pro Ser Ala Asp Ala Pro Ile Ala Ala Ser Val Ala Cys Val Glu Asn
          35           40           45
Ile Ile Ala Glu Gly Arg Thr Ala Tyr Gly Ile Asn Thr Gly Phe Gly
      50           55           60
Leu Leu Ala Ser Thr Arg Ile Ser Pro Ala Asp Leu Glu Lys Leu Gln
  65           70           75           80
Arg Ser Ile Val Leu Ser His Ala Ala Gly Val Gly Glu Ala Leu Asp
          85           90           95
Asp Ala Met Val Arg Leu Val Met Leu Leu Lys Val Asn Ser Leu Ala
          100          105          110
Arg Gly Phe Ser Gly Ile Arg Arg Lys Val Ile Asp Ala Leu Ile Ala
          115          120          125
Leu Ile Asn Ala Glu Val Tyr Pro His Ile Pro Leu Lys Gly Ser Val
      130          135          140
Gly Ala Ser Gly Asp Leu Ala Pro Leu Ala His Met Ser Leu Val Leu
  145          150          155          160
Ile Gly Glu Ser Arg Ala Arg His Ala Arg Gly Glu Trp Leu Pro Ala
          165          170          175

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Ala	Glu	Ala	Leu 180	Ala	Val	Ala	Gly	Leu 185	Glu	Pro	Leu	Thr	Leu 190	Ala	Ala
Lys	Glu	Gly 195	Leu	Ala	Leu	Leu	Asn 200	Gly	Thr	Gln	Val	Ser 205	Thr	Ala	Tyr
Ala	Leu 210	Arg	Gly	Leu	Phe	Glu 215	Ala	Glu	Asp	Leu	Phe 220	Ala	Ala	Ala	Thr
Val 225	Cys	Gly	Gly	Leu	Ser 230	Val	Glu	Ala	Met	Leu 235	Gly	Ser	Arg	Ala	Pro 240
Phe	Asp	Ala	Arg	Ile 245	His	Ala	Ala	Leu	Arg 250	Gly	Gln	Arg	Gly	Gln 255	Ile
Asp	Val	Ala 260	Ala	Ala	Tyr	Arg	Asp	Leu 265	Leu	Ala	Ser	Ser	Glu 270	Val	Ala
Arg	Ser	His 275	Glu	Lys	Cys	Asp	Gly 280	Lys	Val	Gln	Asp	Pro 285	Tyr	Ser	Leu
Arg	Cys 290	Gln	Pro	Gln	Val	Met 295	Gly	Ala	Cys	Leu	Thr 300	Gln	Met	Arg	Gln
Ala 305	Ala	Glu	Val	Leu	Glu 310	Ile	Glu	Ala	Asn	Ala 315	Val	Ser	Asp	Asn	Pro 320
Leu	Val	Phe	Ala	Ala 325	Gly	Asp	Val	Ile	Ser 330	Gly	Gly	Asn	Phe	His 335	Ala
Glu	Pro	Val	Ala 340	Met	Ala	Ala	Asp	Asn 345	Leu	Ala	Leu	Ala	Leu 350	Ala	Glu
Ile	Gly	Ser 355	Leu	Ser	Glu	Arg	Arg 360	Ile	Ser	Leu	Met	Met 365	Asp	Met	His
Met	Ser 370	Gln	Asp	Leu	Pro	Pro 375	Phe	Leu	Val	Ala	Asn 380	Gly	Gly	Val	Asn
Ser 385	Gly	Phe	Met	Ile	Ala 390	Gln	Val	Thr	Ala	Ala 395	Ala	Leu	Ala	Ser	Asp 400
Asn	Lys	Ala	Leu	Ala 405	His	Pro	Ala	Ser	Val 410	Asp	Ser	Leu	Pro	Thr 415	Ser
Ala	Asn	Gln	Glu 420	Asp	His	Val	Ser	Met 425	Ala	Pro	Asn	Ala	Gly 430	Lys	Arg
Leu	Trp	Ala 435	Met	Ala	Glu	Asn	Val	Arg	Gly	Ile	Leu	Ala 445	Val	Glu	Trp
Leu	Gly 450	Ala	Cys	Gln	Gly	Leu 455	Asp	Phe	Arg	Glu	Gly 460	Leu	Lys	Ser	Ser
Pro 465	Lys	Leu	Glu	Gln	Ala 470	Arg	Arg	Leu	Leu	Arg 475	Asp	Lys	Val	Pro	Tyr 480

Tyr Gln Glu Asp Arg Phe Phe Ala Pro Asp Ile Glu Ala Ala Ser Gln
 485 490 495

Leu Leu Ala Ser Gly Cys Leu Asn Ala Leu Leu Pro Ala Arg Leu Leu
 500 505 510

Pro

<210> 52

<211> 513

<212> PRT

<213> Bacillus halodurans

<400> 52

Met Ala Met Thr Asn Leu Lys Leu Leu Asp Gly Arg Ser Leu Ser Leu
 1 5 10 15

His Asp Leu His Arg Ile Ile Tyr Glu Gly Glu Thr Val Gly Ala Ser
 20 25 30

Asp Glu Ser Met Glu Lys Val Lys Gln Ser Arg Lys Ala Val Glu Gln
 35 40 45

Ile Val Ala Asp Glu Lys Ile Ile Tyr Gly Ile Thr Thr Gly Phe Gly
 50 55 60

Lys Phe Ser Asp Ile Phe Ile Asp Pro Asp Asp Val Glu Asn Leu Gln
 65 70 75 80

His Asn Leu Ile Tyr Ser His Ala Cys Gly Val Gly Ser Pro Phe Pro
 85 90 95

Glu Thr Val Ser Arg Thr Met Leu Val Leu Arg Ala Asn Ala Leu Leu
 100 105 110

Lys Gly Phe Ser Gly Val Arg Pro Leu Val Ile Glu Arg Leu Leu Ala
 115 120 125

Leu Val Asn Ala Asn Ile His Pro Val Ile Pro Gln Gln Gly Ser Leu
 130 135 140

Gly Ala Ser Gly Asp Leu Ala Pro Leu Ser His Leu Ala Leu Val Leu
 145 150 155 160

Leu Gly Glu Gly Glu Val Phe Asp Tyr Lys Gly Thr Lys Thr Lys Ala
 165 170 175

Ser Phe Ala Leu Lys Glu Glu Glu Ile Glu Pro Ile Thr Leu Thr Ala
 180 185 190

Lys Glu Gly Leu Ala Leu Ile Asn Gly Thr Gln Ala Met Thr Ala Met
 195 200 205

Gly Val Ile Ala Tyr Leu Glu Ala Glu Lys Leu Ala Phe Gln Ser Glu
 210 215 220

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Ile Ile Ala Ser Leu Thr Met Glu Gly Leu Arg Gly Ile Ile Asp Ala
 225 230 235 240
 Phe Asp Glu Gln Ile His Phe Ala Leu Arg Gly Tyr Val Glu Gln Val
 245 250 255
 Asp Val Ala Arg Arg Met Glu Ser Tyr Leu Gln Asp Ser Gln Leu Thr
 260 265 270
 Thr Ser His Arg Gln Gly Glu Leu Arg Val Gln Asp Ala Tyr Ser Leu
 275 280 285
 Arg Cys Ile Pro Gln Val His Gly Ala Thr Trp Gln Thr Leu Arg Tyr
 290 295 300
 Val Lys Glu Lys Leu Glu Ile Glu Met Asn Ala Ala Thr Asp Asn Pro
 305 310 315 320
 Leu Ile Phe Asp Asn Gly Gln Val Ile Ser Gly Gly Asn Phe His Gly
 325 330 335
 Gln Gln Ile Ala Leu Ala Met Asp Phe Leu Gly Ile Ala Met Ala Glu
 340 345 350
 Leu Ala Asn Ile Ser Glu Arg Arg Ile Glu Arg Leu Val Asn Pro Gln
 355 360 365
 Leu Asn Arg Asp Leu Pro Pro Phe Leu Ser Ala Ala Pro Gly Val Gln
 370 375 380
 Ser Gly Val Met Ile Leu Gln Tyr Cys Ala Ala Ser Leu Val Ser Glu
 385 390 395 400
 Asn Lys Thr Leu Ala His Pro Ala Ser Val Asp Ser Ile Pro Ser Ser
 405 410 415
 Ala Asn Gln Glu Asp His Val Ser Met Gly Thr Ile Gly Ser Arg His
 420 425 430
 Ala Tyr Gln Ile Ile Gln Asn Val Arg Asn Val Leu Ala Ile Glu Leu
 435 440 445
 Ile Cys Ala Met Gln Ala Val Asp Ile Arg Gly Arg Glu Lys Met Ala
 450 455 460
 Ser Phe Thr Lys Lys Ile Leu Glu Lys Gly Arg Glu His Val Pro Tyr
 465 470 475 480
 Ile Asp Gln Asp Arg Met Phe Ala Lys Asp Ile Glu Arg Ala Ala Lys
 485 490 495
 Trp Leu Lys Asp Gly Ser Trp Asp Phe Thr Lys Met Arg Glu Lys Glu
 500 505 510
 Arg

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<210> 53
 <211> 513
 <212> PRT
 <213> Pseudomonas putida

<400> 53

Met	Ala	Ser	Ala	Thr	Glu	Leu	Thr	Leu	Lys	Pro	Gly	Thr	Leu	Thr	Leu
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Ala	Gln	Leu	Arg	Ala	Ile	His	Ala	Ala	Pro	Val	Arg	Leu	Gln	Leu	Asp
			20					25					30		
Ala	Ser	Ala	Ala	Pro	Ala	Ile	Asp	Ala	Ser	Val	Ala	Cys	Val	Glu	Gln
			35				40					45			
Ile	Ile	Ala	Glu	Asp	Arg	Thr	Ala	Tyr	Gly	Ile	Asn	Thr	Gly	Phe	Gly
	50					55					60				
Leu	Leu	Ala	Ser	Thr	Arg	Ile	Ala	Ser	His	Asp	Leu	Glu	Asn	Leu	Gln
65					70					75					80
Arg	Ser	Leu	Val	Leu	Ser	His	Ala	Ala	Gly	Ile	Gly	Ala	Pro	Leu	Asp
				85					90					95	
Asp	Asp	Leu	Val	Arg	Leu	Ile	Met	Val	Leu	Lys	Ile	Asn	Ser	Leu	Ser
			100					105					110		
Arg	Gly	Phe	Ser	Gly	Ile	Arg	Arg	Lys	Val	Ile	Asp	Ala	Leu	Ile	Ala
		115					120					125			
Leu	Val	Asn	Ala	Glu	Val	Tyr	Pro	His	Ile	Pro	Leu	Lys	Gly	Ser	Val
	130					135					140				
Gly	Ala	Ser	Gly	Asp	Leu	Ala	Pro	Leu	Ala	His	Met	Ser	Leu	Val	Leu
145					150					155					160
Leu	Gly	Glu	Gly	Lys	Ala	Arg	Asp	Tyr	Lys	Gly	Gln	Trp	Leu	Ser	Ala
				165					170					175	
Thr	Glu	Ala	Leu	Ala	Val	Ala	Gly	Leu	Glu	Pro	Leu	Thr	Leu	Ala	Ala
			180					185					190		
Lys	Glu	Gly	Leu	Ala	Leu	Leu	Asn	Gly	Thr	Gln	Ala	Ser	Thr	Ala	Tyr
		195					200					205			
Ala	Leu	Arg	Gly	Leu	Phe	Tyr	Ala	Glu	Asp	Leu	Tyr	Ala	Ala	Ala	Ile
	210					215					220				
Ala	Cys	Gly	Gly	Leu	Ser	Val	Glu	Ala	Val	Leu	Gly	Ser	Arg	Ser	Pro
225					230					235					240
Phe	Asp	Ala	Arg	Ile	His	Glu	Ala	Leu	Arg	Gly	Gln	Arg	Gly	Gln	Ile
				245					250					255	
Asp	Thr	Ala	Ala	Cys	Phe	Arg	Asp	Leu	Leu	Gly	Asp	Ser	Ser	Glu	Val
			260					265					270		

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Ser Ser His Lys Asn Cys Asp Gly Lys Val Gln Asp Pro Tyr Ser Leu
 275 280 285
 Arg Cys Gln Pro Gln Val Met Gly Ala Cys Leu Thr Gln Leu Arg Gln
 290 300
 Ala Ala Glu Val Leu Gly Ile Glu Ala Asn Ala Val Ser Asp Asn Pro
 305 310 315 320
 Leu Val Phe Ala Ala Gly Asp Val Ile Ser Gly Gly Asn Phe His Ala
 325 330 335
 Glu Pro Val Ala Met Ala Ala Asp Asn Leu Ala Leu Ala Ile Ala Glu
 340 345 350
 Ile Gly Ser Leu Ser Glu Arg Arg Ile Ser Leu Met Met Asp Lys His
 355 360 365
 Met Ser Gln Asp Leu Pro Pro Phe Leu Val Glu Asn Gly Gly Val Asn
 370 375 380
 Ser Gly Phe Met Ile Ala Gln Val Thr Ala Ala Ala Leu Ala Ser Glu
 385 390 395 400
 Asn Lys Ala Leu Ser His Pro His Ser Val Asp Ser Leu Pro Thr Ser
 405 410 415
 Ala Asn Gln Glu Asp His Val Ser Met Ala Pro Ala Ala Gly Lys Arg
 420 425 430
 Leu Trp Glu Met Ala Glu Asn Thr Arg Gly Val Leu Ala Ile Glu Trp
 435 440 445
 Leu Gly Ala Cys Gln Gly Leu Asp Leu Arg Lys Gly Leu Lys Thr Ser
 450 455 460
 Ala Lys Leu Glu Lys Ala Arg Gln Ala Leu Arg Ser Glu Val Ala His
 465 470 475 480
 Tyr Asp Arg Asp Arg Phe Phe Ala Pro Asp Ile Glu Lys Ala Val Glu
 485 490 495
 Leu Leu Ala Lys Gly Ser Leu Thr Gly Leu Leu Pro Ala Gly Leu Pro
 500 505 510
 Ser

<210> 54
 <211> 513
 <212> PRT
 <213> Rhizobium meliloti

<400> 54
 Met Ala Ser Ala Pro Gln Ile Thr Leu Arg Pro Gly Ser Val Pro Leu
 1 5 10 15

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Ser Asp Leu Glu Thr Ile Tyr Trp Thr Gly Ala Pro Ala Arg Leu Asp
 20 25 30
 Ala Ala Phe Asp Ala Gly Ile Ala Lys Ala Ala Ala Arg Ile Ala Glu
 35 40 45
 Ile Val Ala Gly Asn Ala Pro Val Tyr Gly Ile Asn Thr Gly Phe Gly
 50 55 60
 Lys Leu Ala Ser Ile Lys Ile Asp Ser Ser Asp Val Ala Thr Leu Gln
 65 70 75 80
 Arg Asn Leu Ile Leu Ser His Cys Cys Gly Val Gly Gln Pro Leu Thr
 85 90 95
 Glu Asp Ile Val Arg Leu Ile Met Ala Leu Lys Leu Ile Ser Leu Gly
 100 105 110
 Arg Gly Ala Ser Gly Val Arg Leu Glu Leu Val Arg Leu Ile Glu Ala
 115 120 125
 Met Leu Asp Lys Gly Val Ile Pro Leu Ile Pro Glu Lys Gly Ser Val
 130 135 140
 Gly Ala Ser Gly Asp Leu Ala Pro Leu Ala His Met Ala Ala Val Met
 145 150 155 160
 Met Gly His Gly Glu Ala Phe Phe Ala Gly Glu Arg Met Lys Gly Asp
 165 170 175
 Ala Ala Leu Lys Ala Glu Ala Gly Leu Ser Pro Val Thr Leu Ala Ala
 180 185 190
 Lys Glu Gly Leu Ala Leu Ile Asn Gly Thr Gln Val Ser Thr Ala Leu
 195 200 205
 Ala Leu Ala Gly Leu Phe Arg Ala His Arg Ala Gly Gln Ala Ala Leu
 210 215 220
 Ile Thr Gly Ala Leu Ser Thr Asp Ala Ala Met Gly Ser Ser Ala Pro
 225 230 235 240
 Phe His Pro Asp Ile Gln His Cys Ala Ala Ile Arg Ala Arg Ser Thr
 245 250 255
 Arg Ala Ala Ala Asn Leu Arg Gln Leu Leu Thr Gly Ser Pro Ile Arg
 260 265 270
 Gln Ser His Ile Glu Gly Asp Glu Arg Val Gln Asp Pro Tyr Cys Ile
 275 280 285
 Arg Cys Gln Pro Gln Val Asp Gly Ala Cys Leu Asp Leu Leu Arg Ser
 290 295 300
 Val Ala Ala Thr Leu Thr Ile Glu Ala Asn Ala Val Thr Asp Asn Pro
 305 310 315 320

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 108120542560

Leu Val Leu Ser Asp Asn Ser Val Val Ser Gly Gly Asn Phe His Ala
 325 330 335
 Glu Pro Val Ala Phe Ala Ala Asp Gln Ile Ala Leu Ala Val Cys Glu
 340 345 350
 Ile Gly Ala Ile Ser Gln Arg Arg Ile Ala Leu Leu Val Asp Pro Ala
 355 360 365
 Leu Ser Leu Arg Leu Pro Ala Phe Leu Ala Lys Lys Pro Gly Leu Asn
 370 375 380
 Ser Gly Leu Met Ile Ala Glu Val Thr Ser Ala Ala Leu Met Ser Glu
 385 390 395 400
 Asn Lys Gln Leu Ser His Pro Ala Ser Val Asp Ser Thr Pro Thr Ser
 405 410 415
 Ala Asn Gln Glu Asp His Val Ser Met Ala Cys His Gly Ala Arg Arg
 420 425 430
 Leu Leu Gln Met Thr Glu Asn Leu Phe Ser Ile Ile Gly Ile Glu Ala
 435 440 445
 Leu Ala Ala Val Gln Gly Ile Glu Phe Arg Ala Pro Leu Thr Thr Ser
 450 455 460
 Pro Glu Leu Gln Lys Ala Ala Ala Ala Val Arg Gly Val Ser Ser Ser
 465 470 475 480
 Ile Glu Glu Asp Arg Tyr Met Ala Asp Asp Leu Lys Ala Ala Gly Asp
 485 490 495
 Leu Val Ala Ser Gly Arg Leu Ala Ala Ala Val Ser Ala Gly Leu Pro
 500 505 510

Lys

<210> 55

<211> 513

<212> PRT

<213> *Pseudomonas aeruginosa*

<400> 55

Met Ser Asp Leu Pro Ser Val Val Phe Gly Asp Gly Pro Leu Arg Trp
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Gln Glu Leu Val Ala Val Ala Arg His Gly Ala Arg Leu Glu Leu Ser
 20 25 30

Ala Ala Ala Trp Ala Arg Ile Asp Asn Ala Arg Ala Ile Val Cys Arg
 35 40 45

Ile Val Ala Asn Gly Glu Arg Ala Tyr Gly Ile Ser Thr Gly Leu Gly
 50 55 60

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Ala	Leu	Cys	Asp	Val	Leu	Leu	Glu	Gly	Glu	Gln	Leu	Ala	Glu	Leu	Ser	
65					70					75					80	
Arg	Asn	Thr	Leu	Leu	Ser	His	Ala	Cys	Gly	Val	Gly	Glu	Pro	Leu	Arg	
				85					90						95	
Asp	Glu	Gln	Thr	Arg	Ala	Ile	Ile	Cys	Ala	Ala	Val	Ala	Asn	Tyr	Ser	
			100					105						110		
Gln	Gly	Lys	Ser	Gly	Leu	Asp	Arg	Ser	Leu	Val	Glu	Gly	Leu	Leu	Ala	
		115					120					125				
Leu	Leu	Asn	His	Gly	Ile	Thr	Pro	Gln	Val	Pro	Ala	Gln	Gly	Ser	Val	
	130					135						140				
Gly	Tyr	Ser	Gly	Asp	Leu	Thr	His	Met	Ala	His	Val	Gly	Ile	Ala	Leu	
145					150					155					160	
Leu	Gly	Ile	Gly	Glu	Val	Ser	Asp	Tyr	Arg	Gly	Ser	Val	Val	Pro	Ala	
				165					170						175	
Ala	Ala	Ala	Leu	Ala	Ala	Glu	Gly	Leu	Ala	Thr	Val	Arg	Leu	Gly	Ala	
			180					185					190			
Lys	Asp	Gly	Leu	Cys	Leu	Val	Asn	Gly	Thr	Pro	Cys	Met	Thr	Gly	Leu	
		195					200					205				
Ala	Cys	Leu	Ala	Leu	Asp	Asp	Ala	Gln	Arg	Leu	Ala	Gln	Trp	Ala	Asp	
	210					215					220					
Val	Ile	Gly	Ala	Met	Ser	Phe	Glu	Ala	Leu	Arg	Gly	Gln	Leu	Ala	Ala	
225					230					235					240	
Phe	Asp	Ala	Glu	Ile	His	Val	Ala	Leu	Lys	Pro	His	Pro	Gly	Met	Gln	
				245					250					255		
Arg	Val	Ala	Ala	Asn	Leu	Arg	Ala	Leu	Leu	Ala	Gly	Ser	Gln	Val	Leu	
			260					265						270		
Glu	Asn	Ala	Arg	Glu	Gly	Gly	Ile	Arg	Thr	Gln	Asp	Ala	Leu	Ser	Ile	
		275					280					285				
Arg	Ser	Ile	Pro	Gln	Ile	His	Gly	Ala	Cys	Arg	Asp	Gln	Leu	Ala	His	
	290					295					300					
Ala	Arg	Gln	Ile	Glu	Thr	Arg	Glu	Leu	Asn	Ser	Ala	Thr	Asp	Asn	Pro	
305					310					315					320	
Leu	Leu	Leu	Gly	Thr	Pro	Glu	Val	Val	Ser	Gln	Ala	Asn	Pro	His	Gly	
				325					330					335		
Glu	Ser	Val	Ala	Met	Ala	Ala	Asp	Leu	Leu	Ala	Ile	Ala	Val	Ala	Glu	
			340					345					350			
Leu	Gly	Gly	Val	Ala	Glu	Arg	Arg	Leu	Asp	Arg	Leu	Val	Asn	Pro	Leu	
		355					360					365				

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Val Ser Arg Gly Leu Pro Ala Phe Leu Val Gly Lys Pro Gly Val Asn
 370 375 380

Ser Gly Met Met Ile Thr Gln Tyr Val Ala Ala Ser Leu Ala Gly Glu
 385 390 395 400

Asn Arg Gln Leu Ala Gln Pro Ala Val Val Asp Asn Phe Val Thr Ser
 405 410 415

Ala Leu Gln Glu Asp His Leu Ser Leu Gly Thr Ser Ala Ala Leu Lys
 420 425 430

Leu Gly Arg Ala Leu Glu Asn Leu Arg Arg Ile Leu Ala Ile Glu Tyr
 435 440 445

Leu Leu Ala Ala Gln Ala Phe Glu Phe Leu Ala Pro Gln Arg Phe Gly
 450 455 460

Gln Gly Thr Ala Ala Ala Trp Gly Ile Leu Arg Glu Arg Val Pro Ala
 465 470 475 480

Tyr Asp Thr Asp Arg Trp Leu Ala Pro Asp Ile Ala Ser Ala Ala Ala
 485 490 495

Ile Leu Gly Glu Arg Lys Ser Leu Ala Arg Leu Ala Ala Ser Ile Gly
 500 505 510

Asp

<210> 56
 <211> 513
 <212> PRT
 <213> Homo sapiens

<400> 56
 Lys Tyr Arg Glu Pro Glu Lys Tyr Ile Glu Leu Asp Gly Leu Thr Thr
 1 5 10 15

Glu Asp Leu Val Asn Leu Gly Lys Gly Arg Tyr Lys Ile Lys Leu Thr
 20 25 30

Pro Thr Ala Glu Lys Arg Val Gln Lys Ser Arg Glu Val Ile Asp Ser
 35 40 45

Ile Ile Lys Glu Lys Thr Val Val Tyr Gly Ile Thr Thr Gly Phe Gly
 50 55 60

Lys Phe Ala Thr Arg Thr Val Ile Pro Ile Asn Lys Leu Gln Leu Gln
 65 70 75 80

Val Asn Leu Val Arg Ser His Ser Ser Gly Val Gly Lys Pro Leu Ser
 85 90 95

Pro Glu Arg Cys Arg Met Leu Leu Ala Leu Arg Ile Asn Val Leu Ala
 100 105 110

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Lys Gly Tyr Ser Gly Ile Ser Leu Glu Thr Leu Lys Gln Val Ile Glu
 115 120 125
 Met Phe Asn Ala Ser Cys Leu Pro Tyr Val Pro Glu Lys Gly Thr Val
 130 135 140
 Gly Ala Ser Gly Asp Leu Ala Pro Leu Ser His Leu Ala Leu Gly Leu
 145 150 155 160
 Val Gly Glu Gly Lys Met Trp Ser Pro Lys Ser Gly Trp Ala Asp Ala
 165 170 175
 Lys Tyr Val Leu Glu Ala His Gly Leu Lys Pro Val Ile Leu Lys Pro
 180 185 190
 Lys Glu Gly Leu Ala Leu Ile Asn Gly Thr Gln Met Ile Thr Ser Leu
 195 200 205
 Gly Cys Glu Ala Val Glu Arg Ala Ser Ala Ile Ala Arg Gln Ala Asp
 210 215 220
 Ile Val Ala Ala Leu Thr Leu Glu Val Leu Lys Gly Thr Thr Lys Ala
 225 230 235 240
 Phe Asp Thr Asp Ile His Ala Pro Leu Arg Pro His Arg Gly Gln Ile
 245 250 255
 Glu Val Ala Phe Arg Phe Arg Ser Leu Leu Ser Asp Ser Glu Ile Ala
 260 265 270
 Glu Ser His Arg Phe Cys Asp Gly Arg Val Gln Asp Ala Tyr Thr Leu
 275 280 285
 Arg Cys Cys Pro Gln Val His Gly Val Val Asn Asp Thr Ile Ala Phe
 290 295 300
 Val Lys Asn Ile Ile Thr Thr Glu Leu Asn Ser Ala Thr Asp Asn Pro
 305 310 315 320
 Met Val Phe Ala Asn Gly Glu Thr Val Ser Gly Gly Asn Phe His Gly
 325 330 335
 Glu Tyr Pro Ala Lys Ala Leu Asp Tyr Leu Ala Ile Gly Ile His Glu
 340 345 350
 Leu Ala Ala Ile Ser Glu Arg Arg Ile Glu Arg Leu Cys Asn Pro Ser
 355 360 365
 Leu Ser Arg Glu Leu Pro Ala Phe Leu Val Ala Glu Gly Gly Leu Asn
 370 375 380
 Ser Gly Phe Met Ile Ala His Cys Thr Ala Ala Ala Leu Val Ser Glu
 385 390 395 400
 Asn Lys Ala Leu Cys His Pro Ser Ser Val Asp Ser Leu Ser Thr Ser
 405 410 415

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Ala Ala Thr Glu Asp His Val Ser Met Gly Gly Trp Ala Ala Arg Lys
 420 425 430

Ala Leu Arg Val Ile Glu His Val Glu Gln Val Leu Ala Ile Glu Leu
 435 440 445

Leu Ala Ala Cys Gln Gly Ile Glu Phe Leu Arg Pro Leu Lys Thr Thr
 450 455 460

Thr Pro Leu Glu Lys Val Tyr Asp Leu Val Arg Ser Val Val Arg Pro
 465 470 475 480

Trp Ile Lys Asp Arg Phe Met Ala Pro Asp Ile Glu Ala Ala His Arg
 485 490 495

Leu Leu Leu Glu Gln Lys Val Trp Glu Val Ala Ala Pro Tyr Ile Glu
 500 505 510

Lys

<210> 57
 <211> 513
 <212> PRT
 <213> *Caenorhabditis elegans*

<400> 57
 Val Leu Ala Pro Pro Thr Lys Leu Leu Ile Leu Asp Gly Asn Ser Pro
 1 5 10 15

Glu Asp Leu Val Arg Cys Glu Lys Gly Glu Cys Ala Ile Gln Leu Ser
 20 25 30

Met Glu Ser Glu Asp Arg Ile Arg Lys Ala Arg Thr Phe Leu Glu Lys
 35 40 45

Ile Ala Ser Glu His Arg Ala Val Tyr Gly Val Thr Thr Gly Phe Gly
 50 55 60

Thr Phe Ser Asn Val Thr Ile Pro Pro Glu Lys Leu Lys Lys Leu Gln
 65 70 75 80

Leu Asn Leu Ile Arg Ser His Ala Thr Gly Tyr Gly Glu Pro Leu Ala
 85 90 95

Pro Asn Arg Ala Arg Met Leu Leu Ala Leu Arg Ile Asn Ile Leu Ala
 100 105 110

Lys Gly His Ser Gly Ile Ser Val Glu Asn Ile Lys Lys Met Ile Ala
 115 120 125

Ala Phe Asn Ala Phe Cys Val Ser Tyr Val Pro Gln Gln Gly Thr Val
 130 135 140

Gly Cys Ser Gly Asp Leu Cys Pro Leu Ala His Leu Ala Leu Gly Leu
 145 150 155 160

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Leu	Gly	Glu	Gly	Lys	Met	Trp	Ser	Pro	Thr	Thr	Gly	Trp	Gln	Pro	Ala	
				165					170					175		
Asp	Val	Val	Leu	Lys	Lys	Asn	Asn	Leu	Glu	Pro	Leu	Glu	Leu	Gly	Pro	
			180					185					190			
Lys	Glu	Gly	Leu	Ala	Leu	Ile	Asn	Gly	Thr	Gln	Met	Val	Thr	Ala	Leu	
		195					200					205				
Gly	Ala	Tyr	Thr	Leu	Glu	Arg	Ala	His	Asn	Ile	Ala	Arg	Gln	Ala	Asp	
	210					215					220					
Val	Ile	Ala	Ala	Leu	Ser	Leu	Asp	Val	Leu	Lys	Gly	Thr	Thr	Arg	Ala	
225					230					235					240	
Tyr	Asp	Pro	Asp	Ile	His	Arg	Pro	Ile	Arg	Pro	His	Arg	Gly	Gln	Asn	
				245					250					255		
Leu	Ser	Ala	Leu	Arg	Leu	Arg	Ala	Leu	Leu	Asn	Pro	Ser	Gln	Ile	Ala	
			260					265					270			
Glu	Ser	His	Arg	Asn	Cys	Thr	Gly	Lys	Val	Gln	Asp	Ala	Tyr	Thr	Leu	
		275					280					285				
Arg	Cys	Val	Pro	Gln	Val	His	Gly	Val	Val	His	Asp	Thr	Ile	Glu	Phe	
	290					295					300					
Val	Arg	Glu	Ile	Ile	Thr	Thr	Glu	Met	Asn	Ser	Ala	Thr	Asp	Asn	Pro	
305					310					315					320	
Leu	Val	Phe	Ala	Asp	Arg	Glu	Ile	Ile	Ser	Gly	Gly	Asn	Phe	His	Gly	
				325					330					335		
Glu	Tyr	Pro	Ala	Lys	Ala	Leu	Asp	Phe	Leu	Ala	Ile	Ala	Val	Ala	Glu	
			340					345					350			
Leu	Ala	Gln	Met	Ser	Glu	Arg	Arg	Leu	Glu	Arg	Leu	Val	Asn	Lys	Glu	
		355					360					365				
Leu	Ser	Arg	Gly	Leu	Pro	Thr	Phe	Leu	Thr	Pro	Asp	Gly	Gly	Leu	Asn	
	370					375					380					
Ser	Gly	Phe	Met	Thr	Val	Gln	Leu	Cys	Ala	Ala	Ser	Leu	Val	Ser	Glu	
385					390					395					400	
Asn	Lys	Val	Leu	Cys	His	Pro	Ser	Ser	Val	Asp	Ser	Ile	Pro	Thr	Ser	
				405					410					415		
Cys	Asn	Gln	Glu	Asp	His	Val	Ser	Met	Gly	Gly	Phe	Ala	Ala	Arg	Lys	
		420						425					430			
Ala	Leu	Thr	Val	Val	Glu	His	Val	Glu	Ala	Val	Leu	Ala	Met	Glu	Leu	
		435					440					445				
Leu	Ala	Ala	Cys	Gln	Gly	Ile	Glu	Phe	Leu	Lys	Pro	Leu	Ile	Ser	Thr	
	450					455					460					

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Ala Pro Leu His Lys Ile Tyr Gln Leu Val Arg Ser Lys Val Ala Pro
465 470 475 480

Pro Asn Glu Asp Arg Tyr Met Lys Pro Glu Ile Asp Ala Val Leu Glu
485 490 495

Met Ile Arg Glu Asn Arg Ile Trp Glu Ala Val Leu Pro His Leu Glu
500 505 510

Thr

<210> 58

<211> 513

<212> PRT

<213> Thermoplasma acidophilum

<400> 58

Met Ala Ser Ala Pro Met Ile Glu Ile Asp Gly Arg Ser Leu Arg Val
1 5 10 15

Glu Asp Val Tyr Ala Val Ala Val Glu Tyr Asp Arg Val Ser Ile Ser
20 25 30

Asp Asp Thr Leu Lys Ala Val Glu Glu Lys His Glu Ala Phe Leu Lys
35 40 45

Leu Ile Asn Ser Gly Lys Thr Val Tyr Gly Val Asn Thr Gly Phe Gly
50 55 60

Ser Leu Leu Asn Val His Ile Glu Arg Asp Gln Glu Ile Glu Leu Gln
65 70 75 80

Lys Asn Leu Ile Arg Ser His Ser Ser Gly Val Gly Asp Tyr Leu Glu
85 90 95

Asn Arg Tyr Val Arg Ala Ile Met Ala Val Arg Leu Asn Ser Leu Ala
100 105 110

Ala Gly Tyr Ser Ala Val Ser Ala Asp Leu Leu Asn Met Met Val Glu
115 120 125

Met Leu Asn Arg Asp Val Ile Pro Ala Val Pro Lys Tyr Gly Ser Val
130 135 140

Gly Ala Ser Gly Asp Leu Ala Pro Leu Ala His Ile Gly Leu Ala Met
145 150 155 160

Met Gly Glu Gly Lys Ala Phe Asp Phe Glu Gly Arg Leu Met Asp Ser
165 170 175

Ala Arg Ala Leu Glu Lys Ala Gly Leu Lys Pro Tyr Gln Phe Lys Glu
180 185 190

Lys Glu Gly Val Ala Leu Ile Asn Gly Thr Ser Phe Met Ser Gly Ile
195 200 205

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Leu Ser Ile Ala Val Met Asp Ala His Asp Ile Leu Glu Asn Ala Ile
 210 215 220
 Arg Ser Ala Leu Leu Ser Phe Glu Ala Leu Gly Gly Thr Ser Lys Ala
 225 230 235 240
 Phe Thr Pro Trp Ile Leu Gly Ala Leu Arg Pro His Leu Gly Gln Val
 245 250 255
 Ala Ile Gly Asn Arg Phe Arg Glu Tyr Leu Thr Gly Ser Asp Ile Val
 260 265 270
 Ala Ser Lys Arg Ala Asp Ser Val Lys Val Gln Asp Ala Tyr Thr Leu
 275 280 285
 Arg Cys Ile Pro Gln Val Tyr Gly Ser Val Ala Asp Val Ile Asp Tyr
 290 295 300
 Val Glu Asn Val Leu Ser Val Glu Ile Asn Ser Ala Thr Asp Asn Pro
 305 310 315 320
 Leu Val Phe Asn Gly Glu Glu Val Val Ser Gly Gly Asn Phe His Gly
 325 330 335
 Glu Pro Val Ala Leu Ala Ala Asp Phe Leu Ala Ile Ala Leu Thr Asp
 340 345 350
 Leu Gly Asn Met Val Glu Arg Arg Ile Ala Arg Leu Val Asp Thr Asn
 355 360 365
 Leu Ser Arg Gly Leu Pro Pro Phe Leu Thr Pro Asp Ser Gly Leu Asn
 370 375 380
 Ser Gly Tyr Met Ile Pro Gln Tyr Thr Ala Ala Ala Leu Cys Asn Arg
 385 390 395 400
 Asn Lys Val Leu Ala Tyr Pro Ser Ser Ala Asp Thr Ile Pro Thr Ser
 405 410 415
 Ala Asn Gln Glu Asp His Val Ser Met Gly Ala Thr Gly Ser Leu Lys
 420 425 430
 Leu Leu Glu Ile Ile Asp Asn Val Arg Tyr Ile Ile Ala Ile Glu Tyr
 435 440 445
 Leu Leu Gly Ser Gln Ala Leu Glu Phe Thr Asp Lys Leu Gly Met Ser
 450 455 460
 Pro Ser Thr Arg Lys Ile Tyr Glu Lys Ile Arg Glu Lys Val Glu Lys
 465 470 475 480
 Leu Asp His Asp Arg Pro Pro Ser Phe Asp Ile Glu Thr Ile Arg Lys
 485 490 495
 Met Met Asp Lys Lys Glu Phe Ile Ser Ala Leu Pro Ala His Leu Pro
 500 505 510

Ala

0933745-01301

<210> 59
 <211> 513
 <212> PRT
 <213> Mus sp.

<400> 59

Lys	Tyr	Arg	Glu	Pro	Glu	Lys	Tyr	Ile	Ala	Leu	Asp	Gly	Asp	Ser	Thr
1				5					10					15	
Glu	Asp	Leu	Val	Asn	Leu	Gly	Lys	Gly	Arg	Tyr	Lys	Ile	Lys	Leu	Thr
		20						25					30		
Ser	Ile	Ala	Glu	Lys	Lys	Val	Gln	Gln	Ser	Arg	Glu	Val	Ile	Asp	Ser
		35					40					45			
Ile	Ile	Lys	Glu	Arg	Thr	Val	Val	Tyr	Gly	Ile	Thr	Thr	Gly	Phe	Gly
	50					55					60				
Lys	Phe	Ala	Thr	Arg	Thr	Val	Ile	Pro	Ala	Asn	Lys	Leu	Gln	Leu	Gln
65					70					75					80
Val	Asn	Leu	Val	Arg	Ser	His	Ser	Ser	Gly	Val	Gly	Lys	Pro	Leu	Ser
				85					90					95	
Pro	Glu	Arg	Cys	Arg	Met	Leu	Leu	Ala	Leu	Arg	Ile	Asn	Val	Leu	Ala
			100					105					110		
Lys	Gly	Tyr	Ser	Gly	Ile	Ser	Leu	Glu	Thr	Leu	Lys	Gln	Val	Ile	Glu
		115					120					125			
Ala	Phe	Asn	Ala	Ser	Cys	Leu	Ser	Tyr	Val	Pro	Glu	Lys	Gly	Thr	Val
	130					135					140				
Gly	Ala	Ser	Gly	Asp	Leu	Ala	Pro	Leu	Ser	His	Leu	Ala	Leu	Gly	Leu
145					150					155					160
Ile	Gly	Glu	Gly	Lys	Met	Trp	Ser	Pro	Lys	Ser	Gly	Trp	Ala	Asp	Ala
				165					170					175	
Lys	Tyr	Val	Leu	Glu	Ala	His	Gly	Leu	Lys	Pro	Ile	Val	Leu	Lys	Pro
		180						185					190		
Lys	Glu	Gly	Leu	Ala	Leu	Ile	Asn	Gly	Thr	Gln	Met	Ile	Thr	Ser	Leu
		195					200					205			
Gly	Cys	Glu	Ala	Leu	Glu	Arg	Ala	Ser	Ala	Ile	Ala	Arg	Gln	Ala	Asp
	210					215					220				
Ile	Val	Ala	Ala	Leu	Thr	Leu	Glu	Val	Leu	Lys	Gly	Thr	Thr	Lys	Ala
225					230					235					240
Phe	Asp	Thr	Asp	Ile	His	Ala	Pro	Val	Arg	Pro	His	Arg	Gly	Gln	Ile
				245					250					255	

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Glu Val Ala Phe Arg Phe Arg Ser Leu Leu Ser Asp Ser Glu Ile Ala
 260 265 270
 Glu Ser His Arg Phe Cys Asp Gly Arg Val Gln Asp Ala Tyr Thr Leu
 275 280 285
 Arg Cys Cys Pro Gln Val His Gly Val Val Asn Asp Thr Ile Ala Phe
 290 295 300
 Val Lys Asp Ile Ile Thr Thr Glu Leu Asn Ser Ala Thr Asp Asn Pro
 305 310 315 320
 Met Val Phe Ala Ser Gly Glu Thr Ile Ser Gly Gly Asn Phe His Gly
 325 330 335
 Glu Tyr Pro Ala Lys Ala Leu Asp Tyr Leu Ala Ile Gly Val His Glu
 340 345 350
 Leu Ala Ala Ile Ser Glu Arg Arg Ile Glu Arg Leu Cys Asn Pro Ser
 355 360 365
 Leu Ser Arg Glu Leu Pro Ala Phe Leu Val Ala Glu Gly Gly Leu Asn
 370 375 380
 Ser Gly Phe Met Ile Ala His Cys Thr Ala Ala Ala Leu Val Ser Glu
 385 390 395 400
 Ser Lys Ala Leu Cys His Pro Ser Ser Val Asp Ser Leu Ser Thr Ser
 405 410 415
 Ala Ala Thr Glu Asp His Val Ser Met Gly Gly Trp Ala Ala Arg Lys
 420 425 430
 Ala Leu Arg Val Val Glu His Val Glu Gln Val Leu Ala Ile Glu Leu
 435 440 445
 Leu Ala Ala Cys Gln Gly Ile Glu Phe Leu Arg Pro Leu Lys Thr Thr
 450 455 460
 Thr Pro Leu Glu Lys Val Tyr Asp Leu Val Arg Ser Val Val Arg Pro
 465 470 475 480
 Trp Ile Lys Asp Arg Phe Met Ala Pro Asp Ile Glu Ala Ala His Arg
 485 490 495
 Leu Leu Leu Asp Gln Lys Val Trp Glu Val Ala Ala Pro Tyr Ile Glu
 500 505 510

Lys

<210> 60

<211> 513

<212> PRT

<213> Mus musculus

0983745-071304

<400> 60

Lys	Tyr	Arg	Glu	Pro	Glu	Lys	Tyr	Ile	Ala	Leu	Asp	Gly	Asp	Ser	Thr
1				5					10					15	
Glu	Asp	Leu	Val	Asn	Leu	Gly	Lys	Gly	Arg	Tyr	Lys	Ile	Lys	Leu	Thr
			20					25					30		
Ser	Ile	Ala	Glu	Lys	Lys	Val	Gln	Gln	Ser	Arg	Glu	Val	Ile	Asp	Ser
		35					40					45			
Ile	Ile	Lys	Glu	Arg	Thr	Val	Val	Tyr	Gly	Ile	Thr	Thr	Gly	Phe	Gly
	50					55					60				
Lys	Phe	Ala	Thr	Arg	Thr	Val	Ile	Pro	Ala	Asn	Lys	Leu	Gln	Leu	Gln
65					70					75					80
Val	Asn	Leu	Val	Arg	Ser	His	Ser	Ser	Gly	Val	Gly	Lys	Pro	Leu	Ser
				85					90					95	
Pro	Glu	Arg	Cys	Arg	Met	Leu	Leu	Ala	Leu	Arg	Ile	Asn	Val	Leu	Ala
			100					105					110		
Lys	Gly	Tyr	Ser	Gly	Ile	Ser	Leu	Glu	Thr	Leu	Lys	Gln	Val	Ile	Glu
		115					120					125			
Ala	Phe	Asn	Ala	Ser	Cys	Leu	Ser	Tyr	Val	Pro	Glu	Lys	Gly	Thr	Val
	130					135					140				
Gly	Ala	Ser	Gly	Asp	Leu	Ala	Pro	Leu	Ser	His	Leu	Ala	Leu	Gly	Leu
145					150					155					160
Ile	Gly	Glu	Gly	Lys	Met	Trp	Ser	Pro	Lys	Ser	Gly	Trp	Ala	Asp	Ala
				165					170					175	
Lys	Tyr	Val	Leu	Glu	Ala	His	Gly	Leu	Lys	Pro	Ile	Val	Leu	Lys	Pro
			180					185					190		
Lys	Glu	Gly	Leu	Ala	Leu	Ile	Asn	Gly	Thr	Gln	Met	Ile	Thr	Ser	Leu
		195					200					205			
Gly	Cys	Glu	Ala	Leu	Glu	Arg	Ala	Ser	Ala	Ile	Ala	Arg	Gln	Ala	Asp
	210					215					220				
Ile	Val	Ala	Ala	Leu	Thr	Leu	Glu	Val	Leu	Lys	Gly	Thr	Thr	Lys	Ala
225					230					235					240
Phe	Asp	Thr	Asp	Ile	His	Ala	Pro	Val	Arg	Pro	His	Arg	Gly	Gln	Ile
				245					250					255	
Glu	Val	Ala	Phe	Arg	Phe	Arg	Ser	Leu	Leu	Ser	Asp	Ser	Glu	Ile	Ala
			260					265					270		
Glu	Ser	His	Arg	Phe	Cys	Asp	Gly	Arg	Val	Gln	Asp	Ala	Tyr	Thr	Leu
		275					280					285			
Arg	Cys	Cys	Pro	Gln	Val	His	Gly	Val	Val	Asn	Asp	Thr	Ile	Ala	Phe
	290					295					300				

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Val Lys Asp Ile Ile Thr Thr Glu Leu Asn Ser Ala Thr Asp Asn Pro
 305 310 315 320

Met Val Phe Ala Ser Gly Glu Thr Ile Ser Gly Gly Asn Phe His Gly
 325 330 335

Glu Tyr Pro Ala Lys Ala Leu Asp Tyr Leu Ala Ile Gly Val His Glu
 340 345 350

Leu Ala Ala Ile Ser Glu Arg Arg Ile Glu Arg Leu Cys Asn Pro Ser
 355 360 365

Leu Ser Arg Glu Leu Pro Ala Phe Leu Val Ala Glu Gly Gly Leu Asn
 370 375 380

Ser Gly Phe Met Ile Ala His Cys Thr Ala Ala Ala Leu Val Ser Glu
 385 390 395 400

Ser Lys Ala Leu Cys His Pro Ser Ser Val Asp Ser Leu Ser Thr Ser
 405 410 415

Ala Ala Thr Glu Asp His Val Ser Met Gly Gly Trp Ala Ala Arg Lys
 420 425 430

Ala Leu Arg Val Val Glu His Val Glu Gln Val Leu Ala Ile Glu Leu
 435 440 445

Leu Ala Ala Cys Gln Gly Ile Glu Phe Leu Arg Pro Leu Lys Thr Thr
 450 455 460

Thr Pro Leu Glu Lys Val Tyr Asp Leu Val Arg Ser Val Val Arg Pro
 465 470 475 480

Trp Ile Lys Asp Arg Phe Met Ala Pro Asp Ile Glu Ala Ala His Arg
 485 490 495

Leu Leu Leu Asp Gln Lys Val Trp Glu Val Ala Ala Pro Tyr Ile Glu
 500 505 510

Lys

<210> 61
 <211> 513
 <212> PRT
 <213> Rattus sp.

<400> 61
 Lys Tyr Arg Glu Pro Glu Lys Tyr Ile Ala Leu Asp Gly Asp Ser Thr
 1 5 10 15

Glu Asp Leu Val Asn Leu Gly Lys Gly His Tyr Lys Ile Lys Leu Thr
 20 25 30

Ser Ile Ala Glu Lys Lys Val Gln Gln Ser Arg Glu Val Ile Asp Ser
 35 40 45

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Ile	Ile	Lys	Glu	Arg	Thr	Val	Val	Tyr	Gly	Ile	Thr	Thr	Gly	Phe	Gly	
	50					55					60					
Lys	Phe	Ala	Thr	Arg	Thr	Val	Ile	Pro	Ala	Asn	Lys	Leu	Gln	Leu	Gln	
	65				70					75					80	
Val	Asn	Leu	Val	Arg	Ser	His	Ser	Ser	Gly	Val	Gly	Lys	Pro	Leu	Ser	
				85					90					95		
Pro	Glu	Arg	Cys	Arg	Met	Leu	Leu	Ala	Leu	Arg	Ile	Asn	Val	Leu	Ala	
			100					105					110			
Lys	Gly	Tyr	Ser	Gly	Ile	Ser	Leu	Glu	Thr	Leu	Lys	Gln	Val	Ile	Glu	
		115					120					125				
Val	Phe	Asn	Ala	Ser	Cys	Leu	Ser	Tyr	Val	Pro	Glu	Lys	Gly	Thr	Val	
	130					135					140					
Gly	Ala	Ser	Gly	Asp	Leu	Ala	Pro	Leu	Ser	His	Leu	Ala	Leu	Gly	Leu	
	145				150					155					160	
Ile	Gly	Glu	Gly	Lys	Met	Trp	Ser	Pro	Lys	Ser	Gly	Trp	Ala	Asp	Ala	
				165					170					175		
Lys	Tyr	Val	Leu	Glu	Ala	His	Gly	Leu	Lys	Pro	Ile	Val	Leu	Lys	Pro	
			180					185					190			
Lys	Glu	Gly	Leu	Ala	Leu	Ile	Asn	Gly	Thr	Gln	Met	Ile	Thr	Ser	Leu	
		195					200					205				
Gly	Cys	Glu	Ala	Val	Glu	Arg	Ala	Ser	Ala	Ile	Ala	Arg	Gln	Ala	Asp	
	210					215					220					
Ile	Val	Ala	Ala	Leu	Thr	Leu	Glu	Val	Leu	Lys	Gly	Thr	Thr	Lys	Ala	
	225				230					235					240	
Phe	Asp	Thr	Asp	Ile	His	Ala	Pro	Val	Arg	Pro	His	Arg	Gly	Gln	Ile	
				245					250					255		
Glu	Val	Ala	Phe	Arg	Phe	Arg	Ser	Leu	Leu	Ser	Asp	Ser	Glu	Ile	Ala	
			260					265					270			
Glu	Ser	His	Arg	Phe	Cys	Asp	Gly	Arg	Val	Gln	Asp	Ala	Tyr	Thr	Leu	
		275					280					285				
Arg	Cys	Cys	Pro	Gln	Val	His	Gly	Val	Val	Asn	Asp	Thr	Ile	Ala	Phe	
	290					295					300					
Val	Lys	Asp	Ile	Ile	Thr	Thr	Glu	Leu	Asn	Ser	Ala	Thr	Asp	Asn	Pro	
	305				310					315					320	
Met	Val	Phe	Ala	Ser	Gly	Glu	Thr	Ile	Ser	Gly	Gly	Asn	Phe	His	Gly	
				325					330					335		
Glu	Tyr	Pro	Ala	Lys	Ala	Leu	Asp	Tyr	Leu	Ala	Ile	Gly	Val	His	Glu	
			340					345					350			

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Leu Ala Ala Ile Ser Glu Arg Arg Ile Glu Arg Leu Cys Asn Pro Ser
 355 360 365
 Leu Ser Arg Glu Leu Pro Ala Phe Leu Val Ala Glu Gly Gly Leu Asn
 370 375 380
 Ser Gly Phe Met Ile Ala His Cys Thr Ala Ala Ala Leu Val Ser Glu
 385 390 395 400
 Ser Lys Ala Leu Cys His Pro Ser Ser Val Asp Ser Leu Ser Thr Ser
 405 410 415
 Ala Ala Thr Glu Asp His Val Ser Met Gly Gly Trp Ala Ala Arg Lys
 420 425 430
 Ala Leu Arg Val Ile Glu His Val Glu Gln Val Leu Ala Ile Glu Leu
 435 440 445
 Leu Ala Ala Cys Gln Gly Ile Glu Phe Leu Arg Pro Leu Lys Thr Thr
 450 455 460
 Thr Pro Leu Glu Lys Val Tyr Asp Leu Val Arg Ser Val Val Arg Pro
 465 470 475 480
 Trp Ile Lys Asp Arg Phe Met Ala Pro Asp Ile Glu Ala Ala His Arg
 485 490 495
 Leu Leu Leu Asp Gln Lys Val Trp Glu Val Ala Ala Pro Tyr Ile Glu
 500 505 510

Lys

<210> 62
 <211> 513
 <212> PRT
 <213> Unknown Organism

<220>
 <223> Description of Unknown Organism: Uncultured bacterium
 pCosAS1

<400> 62
 Met Ala Ser Met Asn Ala Leu Thr Leu Thr Pro Gly Thr Leu Thr Leu
 1 5 10 15
 Ala Gln Leu Arg Gln Val Trp Gln Gln Pro Leu Gln Leu Thr Leu Asp
 20 25 30
 Glu Ser Ala His Glu Ala Ile Asn Asp Ser Val Ala Cys Val Glu Ala
 35 40 45
 Ile Val Ala Glu Gly Arg Thr Ala Tyr Gly Ile Asn Thr Gly Phe Gly
 50 55 60
 Leu Leu Ala Gln Thr Arg Ile Ala Thr His Asp Leu Glu Asn Leu Gln
 65 70 75 80

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Arg	Ser	Leu	Val	Leu	Ser	His	Ala	Ala	Gly	Val	Gly	Glu	Pro	Leu	Asp	85	90	95
Asp	Asp	Ile	Val	Arg	Leu	Met	Met	Val	Leu	Lys	Ile	Asn	Ser	Leu	Ala	100	105	110
Arg	Gly	Phe	Ser	Gly	Ile	Arg	Leu	Ser	Val	Ile	Gln	Ala	Leu	Ile	Ala	115	120	125
Leu	Val	Asn	Ala	Gly	Val	Tyr	Ser	Val	Asp	Pro	Ala	Lys	Gly	Ser	Val	130	135	140
Gly	Ala	Ser	Gly	Asp	Leu	Ala	Pro	Leu	Ala	His	Met	Ser	Leu	Thr	Leu	145	150	155
Leu	Gly	Glu	Gly	Lys	Ala	Arg	Asp	Tyr	Arg	Gly	Glu	Trp	Leu	Pro	Ala	165	170	175
Ala	Thr	Ala	Leu	Gln	Lys	Ala	Gly	Leu	Ala	Pro	Val	Thr	Leu	Ala	Ala	180	185	190
Lys	Glu	Gly	Leu	Ala	Leu	Leu	Asn	Gly	Thr	Gln	Ala	Ser	Thr	Ala	Phe	195	200	205
Ala	Leu	Arg	Gly	Leu	Phe	Glu	Ala	Glu	Asp	Leu	Phe	Ala	Ser	Ala	Val	210	215	220
Val	Cys	Gly	Ala	Leu	Thr	Thr	Glu	Ala	Val	Leu	Gly	Ser	Arg	Arg	Pro	225	230	235
Phe	Asp	Ala	Arg	Ile	His	Glu	Pro	Val	Arg	Gly	Gln	Arg	Gly	Gln	Ile	245	250	255
Asp	Ala	Ala	Ala	Leu	Phe	Arg	His	Val	Leu	Thr	Asp	Thr	Ser	Ala	Ile	260	265	270
Ala	Ser	His	His	Asn	Cys	Asp	Gly	Lys	Val	Gln	Asp	Pro	Tyr	Ser	Leu	275	280	285
Arg	Cys	Gln	Pro	Gln	Val	Met	Gly	Ala	Cys	Leu	Thr	Gln	Met	Arg	Gln	290	295	300
Val	Ala	Glu	Val	Leu	Leu	Val	Glu	Ser	Asn	Ala	Val	Ser	Asp	Asn	Pro	305	310	315
Leu	Val	Phe	Ala	Ala	Asn	Glu	Met	Val	Phe	Arg	Gly	Asn	Phe	His	Ala	325	330	335
Glu	Pro	Val	Ala	Met	Ala	Ala	Asp	Asn	Leu	Ala	Leu	Ala	Ile	Ala	Glu	340	345	350
Ile	Gly	Ala	Leu	Ser	Glu	Arg	Arg	Ile	Ala	Leu	Met	Met	Asp	Lys	His	355	360	365
Met	Ser	Gln	Asp	Leu	Pro	Pro	Phe	Leu	Val	Arg	Asn	Gly	Gly	Val	Asn	370	375	380

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Ser Gly Phe Met Ile Ala Gln Val Thr Ala Ala Ala Leu Ala Ser Glu
385 390 395 400

Asn Lys Gly Leu Cys His Pro Thr Ser Val Asp Lys Ile Pro Pro Ser
405 410 415

Ala Asn Gln Glu Asp His Val Ser Met Ala Pro Ala Ala Gly Arg Arg
420 425 430

Leu Trp Glu Met Ala Gly Asn Thr Arg Gly Val Leu Ala Val Glu Trp
435 440 445

Leu Ala Ala Cys Gln Gly Ala Asp Leu Arg Asp Gly Leu Thr Ser Ser
450 455 460

Pro Leu Leu Glu Gln Ala Arg Gln Ser Cys Gly Glu Gln Val Ala His
465 470 475 480

Tyr Asp Asp Asp Arg Phe Phe Ala Pro Asp Ile Glu Ala Ala Ile Ser
485 490 495

Leu Leu Asn Lys Gly Ser Leu Val Gly Leu Leu Pro Ala Phe Leu Pro
500 505 510

Ala

<210> 63

<211> 513

<212> PRT

<213> Rhizobium meliloti

<400> 63

Met Ala Ser Ala Met Gly Glu Met Ile Ser Leu Asp Gly Pro Leu Thr
1 5 10 15

Trp Arg Glu Ile Ala Ser Ile Ala Glu Gly Ala Ser Leu Asp Leu Ser
20 25 30

Gly Pro Ala Arg Leu Arg Ile Ala Gln Ala Arg Arg Ile Val Asp Ala
35 40 45

Leu Val Glu Arg Gly Ile Arg Gly Tyr Gly Ile Asn Thr Gly Val Gly
50 55 60

Ala Leu Cys Asp Val Ile Ile Ser Arg Glu Asn Gln Gln Ala Leu Ser
65 70 75 80

Arg Asn Ile Ile Leu Ser His Ala Cys Gly Val Gly Asp Pro Leu Gly
85 90 95

Arg Val Glu Ala Arg Ala Val Met Ala Ala Gln Ile Ala Asn Leu Thr
100 105 110

His Gly Tyr Ser Gly Val Arg Val Glu Thr Ala Glu Met Leu Leu Ala
115 120 125

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Leu Leu Asn Ala Asp Ile Ile Pro Leu Ile Pro Ser Arg Gly Ser Val
 130 135 140
 Gly Tyr Ser Gly Asp Leu Ala Pro Leu Thr His Ala Ala Leu Val Leu
 145 150 155 160
 Ile Gly His Gly Ser Ala Met Gln Gly Thr Glu Arg Leu Ser Gly Ala
 165 170 175
 Asp Ala Leu Phe Ala Arg Leu Gly Leu Ala Pro Leu Arg Leu Glu Ala
 180 185 190
 Lys Glu Gly Leu Ser Leu Val Asn Gly Thr Pro Cys Ala Thr Gly Leu
 195 200 205
 Ala Ala Leu Ala Leu Ala Arg Thr Glu Arg Leu Phe Ala Trp Ala Asp
 210 215 220
 Ala Ala Ala Ala Met Thr Tyr Glu Ala Asn Leu Gly Ser Gln Ala Asn
 225 230 235 240
 Ala Phe Ala Glu Leu Pro Leu Ala Leu Arg Gln Ser Pro Gly Leu Ser
 245 250 255
 Ala Val Gly Glu Gly Leu Arg Asp Trp Leu Ala Asp Ser Pro Met Leu
 260 265 270
 Ala Gly His Arg Thr Ala Gly Thr Arg Thr Gln Asp Pro Leu Ser Leu
 275 280 285
 Arg Ala Val Pro Gln Val His Gly Ala Ala Arg Asp Ala Phe Gly Gln
 290 295 300
 Val Ala Glu Ile Val Asp Arg Glu Leu Ala Ser Val Thr Asp Asn Pro
 305 310 315 320
 Ala Val Ala Gly Ser Pro Glu Val His Ser Gln Ala His Ala Val Gly
 325 330 335
 Ala Ala Leu Gly Leu Ala Met Asp Ser Leu Ala Val Ala Val Ala Glu
 340 345 350
 Val Ala Ala Ile Ser Glu Arg Arg Ile Asp Arg Leu Val Asn Pro Leu
 355 360 365
 Val Ser Arg Gly Leu Pro Ala Phe Leu Ala Gly Asp Ser Gly Val Ser
 370 375 380
 Ser Gly Phe Met Ile Ala Gln Tyr Thr Ala Ala Ala Leu Val Ala Glu
 385 390 395 400
 Asn Arg Arg Leu Ala Ala Pro Ala Ser Leu Asp Gly Gly Ile Thr Ser
 405 410 415
 Ala Leu Gln Glu Asp Met Leu Thr His Ala Thr Pro Ala Ala Trp Lys
 420 425 430

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Ala Leu Ser Ile Val Asp Asn Leu Glu Arg Ile Leu Ala Ile Glu Leu
435 440 445

Leu Ala Ala His Arg Pro Met Ser Cys Ser Arg Lys Arg Arg Ala Arg
450 455 460

Arg Asn Ala Pro Leu Pro Phe Thr Gly Thr Tyr Ala Arg Arg Ser Pro
465 470 475 480

Pro Ile Ala Thr Ile Val Arg Ser Ala Glu Leu Glu Ala Ala Tyr Asp
485 490 495

Leu Leu Ala Asn Gly Ser Val His Lys Ala Leu Glu Ala His Leu Pro
500 505 510

Ala

<210> 64

<211> 513

<212> PRT

<213> Halobacterium sp.

<400> 64

Met Ala Ser Ala Pro Gln Ile Thr Leu Gly Leu Ser Gly Ala Thr Ala
1 5 10 15

Asp Asp Val Ile Ala Val Ala Arg His Glu Ala Arg Ile Ser Ile Ser
20 25 30

Pro Gln Val Leu Glu Glu Leu Ala Ser Val Arg Ala His Ile Asp Ala
35 40 45

Leu Ala Ser Ala Asp Thr Pro Val Tyr Gly Ile Ser Thr Gly Phe Gly
50 55 60

Ala Met Ser Asp Thr Arg Ile Asp Ala Ala Asp Arg Glu Ala Leu Gln
65 70 75 80

Ala Asn Leu Val Arg Ser His Ala Ala Gly Ala Gly Ser Glu Leu Asp
85 90 95

Thr Ala Ala Val Arg Ala Leu Leu Val Thr Arg Leu Asn Ala Leu Ala
100 105 110

Lys Gly Tyr Ser Gly Ile Arg Glu Arg Val Leu Asp Val Leu Val Gly
115 120 125

Leu Leu Asn Glu Gly Val His Pro Val Val Pro Ser Arg Gly Ser Leu
130 135 140

Gly Ala Ser Gly Asp Leu Ala Pro Leu Ala His Met Ser Arg Val Leu
145 150 155 160

Ile Gly Glu Gly Gln Ala Thr Asp Val Ala Gly Glu Arg Met Pro Ala
165 170 175

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Ala	Glu	Ala	Leu	Ala	Ala	Ala	Asp	Leu	Glu	Pro	Val	Thr	Leu	Gln	Ala	
			180					185					190			
Lys	Glu	Gly	Leu	Ala	Leu	Ile	Asn	Gly	Thr	Gln	Leu	Thr	Thr	Gly	Val	
		195					200					205				
Ala	Ala	Leu	Ala	Leu	Val	Asp	Ala	Glu	Arg	Val	Leu	Arg	Ser	Ala	Asp	
	210					215					220					
Thr	Ala	Gly	Ala	Leu	Thr	Thr	Glu	Val	Thr	Met	Ser	Thr	Thr	Ala	Ser	
225					230					235					240	
Cys	Ala	Pro	Ala	Ile	His	Glu	Pro	Val	Arg	Pro	His	Asp	Gly	Gln	Ala	
			245						250					255		
Val	Ser	Ala	Arg	His	Ile	Arg	Asn	Leu	Thr	Ala	Gly	Ser	Glu	Val	Leu	
			260					265					270			
Asp	His	His	Arg	Asp	Cys	Asp	Gly	Arg	Val	Gln	Asp	Ala	Tyr	Ser	Ile	
		275					280					285				
Arg	Cys	Leu	Pro	Gln	Val	His	Gly	Ala	Val	Arg	Asp	Ala	Leu	Asp	His	
	290					295					300					
Leu	Arg	Ala	Ala	Val	Ala	Thr	Glu	Leu	Asn	Ser	Ala	Thr	Asp	Asn	Pro	
305					310					315					320	
Leu	Val	Phe	Pro	Ser	Gly	Thr	Val	Val	Ser	Gly	Gly	Asn	Phe	His	Gly	
				325					330					335		
Glu	Val	Leu	Ala	Leu	Arg	Leu	Gly	Tyr	Ala	Ala	Ser	Ala	Leu	Ala	Glu	
			340					345					350			
Leu	Ala	Ala	Ile	Ser	Glu	Arg	Arg	Thr	Asp	Arg	Leu	Leu	Asn	Pro	Glu	
		355					360					365				
Thr	Gln	Glu	Pro	Leu	Glu	Pro	Phe	Leu	Ala	Pro	Asp	Ser	Gly	Leu	His	
	370					375					380					
Ser	Gly	Leu	Met	Ile	Pro	Gln	Tyr	Thr	Ala	Ala	Ser	Leu	Val	Asn	Asp	
385					390					395					400	
Leu	Arg	Ser	Leu	Gly	Gln	Pro	Ala	Thr	Leu	Asp	Asn	Ala	Ser	Val	Ser	
				405					410					415		
Gly	Ala	Gln	Glu	Asp	His	Val	Ser	Met	Ser	Ala	Gly	Ala	Ala	Tyr	Asn	
			420					425					430			
Phe	Arg	Glu	Ala	Val	Glu	Lys	Ala	Ala	Thr	Val	Val	Gly	Val	Glu	Leu	
	435						440					445				
Leu	Cys	Gly	Ala	Gln	Gly	Arg	Glu	Phe	Leu	Asp	Pro	Leu	Ala	Leu	Gly	
	450					455					460					
Ala	Gly	Thr	Ala	Ala	Ala	Tyr	Asp	Leu	Val	Arg	Ser	Glu	Val	Ser	Glu	
465					470					475					480	

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Pro Ala Gly Asp Arg Ala Leu Ala Asp Asp Met Ala Ala Val Gly Asp
485 490 495

Leu Val Arg Ala Gly Leu Val Glu Asp Ala Val Ala Arg Ala Leu Asp
500 505 510

Ala

<210> 65

<211> 504

<212> PRT

<213> Streptomyces griseus

<400> 65

Val Val Val Gly Thr Ser Gly Thr Thr Ala Glu Asp Val Val Ala Val
1 5 10 15

Ala Arg His Gly Ala Arg Val Glu Leu Ser Ala Ala Ala Val Glu Ala
20 25 30

Leu Ala Ala Ala Arg Leu Ile Val Asp Ala Leu Ala Ala Lys Pro Glu
35 40 45

Pro Val Tyr Gly Val Ser Thr Gly Phe Gly Ala Leu Ala Ser Arg His
50 55 60

Ile Gly Thr Glu Leu Arg Ala Gln Leu Gln Arg Asn Ile Val Arg Ser
65 70 75 80

His Ala Ala Gly Met Gly Pro Arg Val Glu Arg Glu Val Val Arg Ala
85 90 95

Leu Met Phe Leu Arg Leu Lys Thr Val Ala Ser Gly His Thr Gly Val
100 105 110

Arg Pro Glu Val Ala Gln Thr Met Ala Asp Val Leu Asn Ala Gly Ile
115 120 125

Thr Pro Val Val His Glu Tyr Gly Ser Leu Gly Cys Ser Gly Asp Leu
130 135 140

Ala Pro Leu Ser His Cys Ala Leu Thr Leu Met Gly Glu Gly Glu Ala
145 150 155 160

Glu Gly Pro Asp Gly Thr Val Arg Pro Ala Gly Glu Leu Leu Ala Ala
165 170 175

His Gly Ile Ala Pro Val Glu Leu Arg Glu Lys Glu Gly Leu Ala Leu
180 185 190

Leu Asn Gly Thr Asp Gly Met Leu Gly Met Leu Val Met Ala Leu Ala
195 200 205

Asp Leu Arg Asn Leu Tyr Thr Ser Ala Asp Ile Thr Ala Ala Leu Ser
210 215 220

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<210>	66
<211>	502
<212>	PRT

<213> Corynebacteriaceae sp.

<400> 66

Ile	Thr	Leu	Gly	Leu	Ser	Gly	Ala	Thr	Ala	Asp	Asp	Val	Ile	Ala	Val	1	5	10	15
Ala	Arg	His	Glu	Ala	Arg	Ile	Ser	Ile	Ser	Pro	Gln	Val	Leu	Glu	Glu	20	25	30	
Leu	Ala	Ser	Val	Arg	Ala	His	Ile	Asp	Ala	Leu	Ala	Ser	Ala	Asp	Thr	35	40	45	
Pro	Val	Tyr	Gly	Ile	Ser	Thr	Gly	Phe	Gly	Ala	Leu	Ala	Thr	Arg	His	50	55	60	
Ile	Ala	Pro	Glu	Asp	Arg	Ala	Lys	Leu	Gln	Arg	Ser	Leu	Ile	Arg	Ser	65	70	75	80
His	Ala	Ala	Gly	Met	Gly	Glu	Pro	Val	Glu	Arg	Glu	Val	Val	Arg	Ala	85	90	95	
Leu	Met	Phe	Leu	Arg	Ala	Lys	Thr	Leu	Ala	Ser	Gly	Arg	Thr	Gly	Val	100	105	110	
Arg	Pro	Val	Val	Leu	Glu	Thr	Met	Val	Gly	Met	Leu	Asn	Ala	Gly	Ile	115	120	125	
Thr	Pro	Val	Val	Arg	Glu	Tyr	Gly	Ser	Leu	Gly	Cys	Ser	Gly	Asp	Leu	130	135	140	
Ala	Pro	Leu	Ser	His	Cys	Ala	Leu	Val	Leu	Met	Gly	Glu	Gly	Glu	Ala	145	150	155	160
Thr	Asp	Ala	His	Gly	Asp	Ile	Arg	Pro	Val	Pro	Glu	Leu	Phe	Ala	Glu	165	170	175	
Ala	Gly	Leu	Thr	Pro	Val	Glu	Leu	Ala	Glu	Lys	Glu	Gly	Leu	Ala	Leu	180	185	190	
Val	Asn	Gly	Thr	Asp	Gly	Met	Leu	Gly	Gln	Leu	Ile	Met	Ala	Leu	Ala	195	200	205	
Asp	Leu	Asp	Glu	Leu	Leu	Asp	Ile	Ala	Asp	Ala	Thr	Ala	Ala	Met	Ser	210	215	220	
Val	Glu	Ala	Gln	Leu	Gly	Thr	Asp	Gln	Val	Phe	Arg	Ala	Glu	Leu	His	225	230	235	240
Glu	Pro	Leu	Arg	Pro	His	Pro	Gly	Gln	Gly	Arg	Ser	Ala	Gln	Asn	Met	245	250	255	
Phe	Ala	Phe	Leu	Ala	Asp	Ser	Pro	Ile	Val	Ala	Ser	His	Arg	Glu	Gly	260	265	270	
Asp	Gly	Arg	Val	Gln	Asp	Ala	Tyr	Ser	Leu	Arg	Cys	Ser	Pro	Gln	Val	275	280	285	

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Thr Gly Ala Ala Arg Asp Thr Ile Ala His Ala Arg Leu Val Ala Thr
 290 295 300
 Arg Glu Leu Ala Ala Ala Ile Asp Asn Pro Val Val Leu Pro Ser Gly
 305 310 315 320
 Glu Val Thr Ser Asn Gly Asn Phe His Gly Ala Pro Val Ala Tyr Val
 325 330 335
 Leu Asp Phe Leu Ala Ile Ala Val Ala Asp Leu Gly Ser Ile Ala Glu
 340 345 350
 Arg Arg Thr Asp Arg Met Leu Asp Pro Ala Arg Ser Arg Asp Leu Pro
 355 360 365
 Ala Phe Leu Ala Asp Asp Pro Gly Val Asp Ser Gly Met Met Ile Ala
 370 375 380
 Gln Tyr Thr Gln Ala Gly Leu Val Ala Glu Asn Lys Arg Leu Ala Val
 385 390 395 400
 Pro Ala Ser Val Asp Ser Ile Pro Ser Ser Ala Met Gln Glu Asp His
 405 410 415
 Val Ser Leu Gly Trp His Ala Ala Arg Lys Leu Arg Thr Ser Val Ala
 420 425 430
 Asn Leu Arg Arg Ile Leu Ala Val Glu Met Leu Ile Ala Gly Arg Ala
 435 440 445
 Leu Asp Leu Arg Ala Pro Leu Lys Pro Gly Pro Ala Thr Gly Ala Val
 450 455 460
 Leu Glu Val Leu Arg Ser Lys Val Ala Gly Pro Gly Gln Asp Arg Phe
 465 470 475 480
 Leu Ser Ala Glu Leu Glu Ala Ala Tyr Asp Leu Leu Ala Asn Gly Ser
 485 490 495
 Val His Lys Ala Leu Glu
 500

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